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The Nature of Magic

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In the struggle for existence man has made use of various means for the purpose of gaining control over environing forces. One of the earliest means which he devised for that end was magic. The course of human thought and activity gives evidence of a constantly recurring socio-mechanistic antithesis. Man's attitudes towards his environing universe will admit of classification into one or other, the social or the mechanical. And Magic belongs psychologically to the sphere of attitudes. It is a way of thinking, and a way of acting, rather than any definite set of thought contents or of actions. It is the habitual disposition to endeavour to control the environment by mechanical means of an occult nature. As I have indicated elsewhere, 'it is an attempt at coercion, and is based upon the belief that if one knows the proper occult means the securing of the desired end is inevitable.'[1] Magic is thus a means of control, mechanical and occult, the origin of which is traceable to the pre-scientific period in human history when men believed not only that anything might happen, but that anything might be made to happen, if one knew the proper means of bringing it about.

The word *magic* goes back, through the Latin *magia* and the Greek *mageia* to the occult learning and practices included in the religion and science of the Persian *magi*, or priests of Zoroaster. Thus from the beginning it has been associated with both the religious (or social) and scientific (or mechanistic) efforts to control the environment. But this statement must be qualified in two ways. First, the origin of the word is not to be confused with the origin of the attitude which is common to many peoples, some of whom antedate the Persian magi. Second, in associating magical practices with religion as well as science, it must not be taken that the magical attitude is sometimes social and sometimes mechanistic. Notwithstanding the fact of this perpetually recurring antithesis in human thinking, the two attitudes with their accompanying techniques are frequently found together in experience. This is especially true with reference to religion and magic. Primitive man very often acts as though he believes the

1 The Relation Between Religion and Science, p. 71.

world of the gods to be amenable to both the social and mechanical means of control. With supplications and votive offerings he seeks the good-will of the deity, while with rites and formulas he tries to force its hand.

The question of the priority of religion or magic has been the subject of an interminable debate among anthropologists. One hypothesis is that magic is of greater antiquity than religion, and that religion originated after man had made the discovery through sad experience that the world was not amenable to the sort of control he tried to exercise through magic. This is the view which Sir J. G. Frazer has expounded in *The Golden Bough*. He considers magic as "nothing but a mistaken application of the very simplest and most elementary processes of the mind, namely the association of ideas by virtue of resemblance or contiguity." [2] On the other hand "religion assumes the operation of conscious or personal agents, superior to man, behind the invisible screen of nature," [3] and consequently "rests on conceptions which the merely animal intelligence can hardly be supposed to have yet attained." [4] He summarizes his position as follows :—"In magic man depends on his own strength to meet the difficulties and dangers that beset him on every side. He believes in a certain established order of nature on which he can surely count, and which he can manipulate for his own ends. When he discovers his mistake, when he recognizes sadly that both the order of nature which he has assumed and the control which he had believed himself to exercise over it were purely imaginary, he ceases to rely on his own intelligence and his own unaided efforts, and throws himself humbly on the mercy of certain great invisible beings behind the veil of nature, to whom he now ascribes all those far-reaching powers which he once arrogated to himself. Thus in the acuter minds magic is gradually superceded by religion, which explains the succession of natural phenomena as regulated by the will, the passion, or the caprice of spiritual beings like man in kind, though vastly superior to him in power." [5]

Andrew Lang in his volume on *Magic and Religion* takes a diametrically opposite view to that of Frazer, claiming that magic is a degenerated offspring of religion. He argues that if Frazer's hypothesis were valid, then the development of religion should involve a disintegration of magic, whereas such is not the case. In Japan and India magic is highly developed alongside religion. Moreover, if we find the most backward race known to us believes in a power, yet propitiates him neither by prayer nor sacrifice, and if we find, as we do, that in many more advanced races in Africa and America, it is precisely the highest power which is left unpropitiated, then we really cannot argue that gods were first invented as powers who could give good things, on receipt of other good things, sacrifice and prayer." [6]

[2] The Golden Bough—abridged edition, p. 54.

[3] *Ibid.*, p. 54.

[4] *Ibid.*, p. 55.

[5] *Ibid.*, p. 711.

[6] Magic and Religion, p. 59.

Still another view is expressed by Dr. F. B. Jevons. He maintains that the theory of Frazer grows out of an evolutionary description of religion whereby "gods were assumed to have developed out of fetishes, religion out of magic, and prayer out of spell." But, he proceeds, "to disprove this, it is not necessary to reject the theory of evolution, or to maintain that evolution in religion proceeds on lines wholly different from those it follows elsewhere."[7] A better understanding of the evolutionary process will be fatal to the theories that "religion is developed magic, or magic degraded religion."[8] The evolutionary process is dispersive, and has been so from the beginning. Jevons quotes Bergson who compares the evolutionary process to a shell which bursts into fragments the moment it is discharged, rather than to a cannon-ball which follows one line. If social evolution is like biological evolution then it is neither necessary to attempt to derive religion from magic, or magic from religion. Man has oscillated between the two from the very beginning, and the wider separation which we now witness is the outcome of the dispersive force of evolution which has been operating so long.

The view which Jevons expresses satisfies better the facts which anthropology has disclosed as well regarding the character of the evolutionary process. In so far as it is possible to observe the behaviour of peoples in primitive stages of culture there is nothing to indicate a priority of either magic or religion over the other. Life at this lower level is an undifferentiated complex. It contains the elements of animism, magic, fetishisim, tabus, spells and prayers, all mingled in heterogeneity. The distinctions between fetishes and deities, spells and prayers, magic and religion as well as art, morality and science all belong to an age of differentiation, a process possible when the mental abilities have attained a considerable measure of development. The savage makes use of magic, has his moral code, has dealings with fetishes and deities, practices incantation and makes requests of powers greater than himself. But he sees no incongruity in mixing these various processes in what seems to cultured man a hopeless confusion. The abilities to make discriminations, form concepts, classify and abstract involve the higher processes of intelligence, and have developed in the history of the race as critical situations confronted man which could not be mastered by means of the instruments afforded in the instinctive and simpler conscious processes.

Indeed there are very few indications that man has yet sufficiently differentiated between magic and religion to be able to keep them apart. Even among more cultured peoples there is a good deal of confusion and a mixing of the two types of control. All that we are able to say is that with the development of intelligence and culture, the tendency is in the direction of discrimination with an inclination toward an increasing predominance of religion over magic. Even Frazer, in spite of his theory of the later origin of religion which Marett characterizes as an "oil and water theory,"[9] acknowledges that the two are frequently found side by side. In describing the Myth of Adonis he says that "the old magical theory of the

7 The Idea of God in Early Religions, p. 123.

8 *Ibid.*, p. 125.

9 The Threshold of Religion, p. 66.

seasons was displaced, or rather supplemented, by a religious theory. For although men now attributed the annual cycle of change primarily to corresponding changes in their deities, they still thought that by certain magical rites they could aid the God. . . ."[10] Marett urges that magic and religion are frequently found in alliance, and that it is not necessary to think of them as constantly trying to uproot each other. "Magic proper is all along an occult process, and, as such, part and parcel of the 'god-stuff' out of which religion fashions itself."[11] We must remember that neither magic nor religion are ends in themselves. The centre of interest is the human group or individual which has an end to achieve, a control to be effected, and, if either alone or both together are deemed to be useful instruments, they must be made to serve man's purposes.

The reasoning of primitive man might be described as a naïve type of realism. For him things are what they seem to be. That sometimes resulted in his bringing into association in his thinking elements whose connection In his experience had been purely fortuitous. For example, there is an incident which Mr. Carveth Read relates[12]—the story of a group of Eskimos who had failed to secure food. As one of the party was hunting, he was eating the meat on the ham-bone of a dog, and as he held this in his hand he met a seal and killed it. Never afterwards did that group of Eskimos go seal-hunting without carrying the ham-bone of a dog in the hand. The two events which came together fortuitously were assumed to be necessarily associated. *Post hoc ergo propter hoc.* Such was the logic which was responsible for the rise of ideas magical. There was no well thought out arrangement between events that were placed in a causal series. Any given cause could produce any given effect. Juxtaposition was a sufficient explanation of causation. To be sure we are dealing here with peoples and ideas of a pre-scientific age. And with such peoples it is the unusual happening rather than the regular and normal which stimulates causal inquiry. In such an age it is believed that anything may happen. The universe, like man himself, is capricious.

Another element in the thought world of primitive man was animism. He believed that his whole environment was peopled with spirits, unlike himself in that they were incorporeal but like himself in that they were capricious. The belief in spirits arose as a part of the magical way of reasoning. He knew how he would like his friends and enemies to fare if he could carry out his will, and when he observed similar fortunes befalling himself or others, he concluded that they were the outcome of other wills, maleficent or beneficent in accordance with the character of the fortune. This was particularly the case when any misfortune happened and is a habit of mind with which people even to-day are perfectly familiar if they live in the midst of animists. In South India one commonly hears the query when, death, illness, famine or other misfortune has visited a man: 'What have I done to bring upon me this anger of the goddess?' The habit of mind that traces a connection between every event and the power of some will is of a piece with magic. But we may go a step further back, and say that the

[10] The Golden Bough—abridged edition, p. 324.
[11] The Threshold of Religion, pp. 35, 66.
[12] The Origin of Man, p. 110.

origin of animistic ideas themselves are the outcome of magical rather than scientific reasoning. The inexplicable (to primitive peoples at least) phenomena of shadows, dreams and death were the sorts of experiences that led to the belief in a spiritual part of man as distinct from the corporeal. In animism primitive men had not arrived at the inter-connection of phenomena, but stopped at the connection of phenomena with spirits. It remained for modern science to reverse the process. It was the unusual such as sickness and death which caused primitive man to think about causes, and it is not surprising that he sought for them in wills like his own. Modern science is much more interested in the regular inter-relationship of phenomena, and formulates new hypotheses, when exceptions indicate that the old ones are inadequate.

Magical reasoning is explained by Frazer on the basis of the association of ideas. This argument is as follows :—" If we analyze the principles of thought on which magic is based, they will probably be found to resolve themselves into two : first, that like produces like, or that an effect resembles its cause ; and, second, that things which have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed. The former principle may be called the Law of Similarity, the latter the Law of Contact or Contagion. From the first of these principles, namely the Law of Similarity, the magician infers that he can produce any effect he desires merely by imitating it : from the second he infers that whatever he does to a material object will affect equally the person with whom the object was once in contact, whether it formed part of his body or not. Charms based on the Law of Similarity may be called Homoeopathic or Imitative Magic. Charms based on the Law of Contact or Contagion may be called Contagious Magic. To denote the first of these branches of magic the term Homoeopathic is perhaps preferable, for the alternative term Imitative or Mimetic suggests, if it does not imply, a conscious agent who imitates, thereby limiting the scope of magic too narrowly. For the same principles which the magician employs in the practice of his art are implicitly believed by him to regulate the operations of inanimate nature ; in other words, he tacitly assumes that the Laws of Similarity and Contact are of universal application and are not limited to human actions. In short, magic is a spurious system of natural law as well as a fallacious guide of conduct ; it is a false science as well as an abortive art. Regarded as a system of natural law, that is, as a statement of the rules which determine the sequence of events throughout the world, it may be called Theoretical Magic : regarded as a set of precepts which human beings observe in order to compass their ends, it may be called Practical Magic. At the same time it is to be borne in mind that the primitive magician knows magic only on its practical side ; he never analyzes the mental processes on which his practice is based, never reflects on the abstract principles involved in his actions. With him, as with the vast majority of men, logic is implicit, not explicit : he reasons just as he digests his food in complete ignorance of the intellectual and physiological processes which are essential to the one operation and to the other. In short, to him magic is always an art, never a science ; the very idea of science is lacking in his undeveloped mind. It is for the philosophic student to trace the train o

thought which underlies the magician's practice; to draw out a few single threads of which the tangled skein is composed; to disengage the abstract principles from their concrete applications; in short, to discern the spurious science behind the bastard art.

"If my analysis of the magician's logic is correct, its two great principles turn out to be merely two different misapplications of the association of ideas. Homoeopathic magic is founded on the association of ideas by similarity; contagious magic is founded on the association of ideas by contiguity. Homoeopathic magic commits the mistake of assuming that things which resemble each other are the same: contagious magic commits the mistake of assuming that things which have once been in contact with each other are always in contact."[13]

This statement of the matter by Frazer demands careful consideration because it contains such valuable suggestions mixed with defective psychology. The value is to be found in the elementary basis for classification which it affords, though some scholars think that it needs completion. The defective character of the psychology is the tendency to follow the associationist position, and regard the principles as actively operating. Marett criticizes Frazer at this point, maintaining that the principles of association are at best only passive in the individual consciousness, and that the important elements are interest and attention. Marett's criticism is no doubt valid, for the time has gone when psychologists conceive of association as static and structural. "The new terminology is illuminating: the substitution of *forms* for *laws* marks the abandonment of the old notion that association was by 'adhesion' of the contiguous and 'attraction' of the similar. We are thus left to find the cause of association in interested attention."[14] Mere contiguity or similarity of themselves are not sufficient either to bring about or to explain an association. The really vital factor is interested attention, a factor which is constantly shifting and can be described better in terms of processes and tendencies than of laws and principles. In addition to that the classification into two types, association by contiguity and association by similarity is by no means unanimously accepted. Some have greatly increased the types, so as to include contiguity in time, contiguity in space, cause and effect, genus and species, the whole and a part, similarity, etc. Others, as *e.g.*, Dr. James Ward, are inclined to reduce them all to one type, and consider each kind of association as a special type of contiguity. Ward says: "When the reviving presentation is only partially similar to the presentation revived, the nature of the association does not appear to differ from that operative when one 'contiguous' association revives another. . . . . On the whole, then, we may assume that the only law of association we have to examine is the so-called law of contiguity."[15]

Prof. James H. Leuba insists that it is necassary to expand the classification which Frazer made on the basis of associationist psychology. While disclaiming any suggestion of finality to his own classification,[16] he suggests the addition of the

[13] The Golden Bough—abridged edition, pp. 11, 12.

[14] James Ward: Article *Psychology* in Encyclopaedia Brittanica, XI Edition, Vol. XX, p. 573.

[15] Psychological Principles, pp. 191—2.

[16] The Psychological Study of Religion, pp. 159, ff.

following types: (i) Principle of repetition,—something that has happened once is likely to happen again; (ii) Principle of the transmission of an effect from one object to another, or sympathetic magic an action taking place upon an object will take place upon another object when the two objects are connected with each other in the minds of the magician; (iii) Principle of efficiency or will-effort—a classification according to the nature of the power involved in the magical operation.

Another method of classification is that suggested by L. Marillier who distinguishes three classes of magic: (i) the magic of the word or art, in which he includes such rites as rain-making, mimetic dances, disease-making, and sympathetic magic generally; (ii) the magic of the human being, independent of rite or formula, and this sometimes requires rites of ceremonial purity, initiation, etc., in order to make the rite effective; and (iii) the magic which demands both a human being with special powers, and the use of certain forms. This latter often gives rise to a special class of persons who are deemed to be possessed of special powers, enabling them to control environmental forces. Here again we find magic approaching religion for this power is sometimes interpreted as divine. This transcendental power has been called by different names among different groups such as *mana* among the Polynesians, *wakan* among the Dakota Indians, and *manitou* among the Algonquins. The concept of *sakti* in India, though it covers a wider significance is also used for the power resident in the magical rite or formula to accomplish the desired end.

From another point of view it is possible to classify magic into positive and negative. Positive magic includes all that which ordinarily goes by the name of magic; negative magic is tabu. Positive magic works on the principle of doing something that something else may be brought to pass; negative magic or tabu is an avoidance of some action to prevent some other thing from happening. Magic is designed to facilitate, promote or induce certain effects; tabu is intended as a prevention or obstruction of certain effects. Both magic and tabu proceed to their end by the use of occult power. Both of them make use of a mechanical type of technique. There is no essential difference between either the habits of mind or the methods of control exercised in either case, so that we do well to classify them as the positive and the negative sides of the same mental attitudes. Tabu, like magic, is frequently connected with things religious. One of the meanings of the concept is 'to keep sacred' from which arose the idea of an object being dangerous. Tabu is also associated with impurity, and certain prohibitions are designed to avoid impurities, whereas some of the means adopted to overcome or avoid impurity are thoroughly magical. Tabu very often illustrates contagious magic, inasmuch as persons who have violated tabus frequently become tabued themselves, and in turn sources of tabu to other persons. In that sense there is a magical transfer of force from the tabued object to the person. Like magic, tabu is regarded by those who believe in it to be due in some cases to the operation of natural forces and in other instances to be socially inflicted. The ramifications of tabu are very great, but there are certain important interests of life which they touch more frequently, among the more common being sex tabus, funerary tabus,

and tabus of priests and of royal persons. It must be added however that magic is sometimes negative in character without being tabu. An example is that group of interdictions which gather about the behaviour of a totem group to its totem animal without being tabu in the technical sense. Violation of such prohibitions are viewed as bringing trouble on the heads of the unfortunate persons, trouble which comes in a sense automatically but which involves no impurity. Such prohibitions are magico-religious rather than purely magical.

Another classification of magic is the following: (i) preventive, (ii) curative, (iii) contagious, and (iv) for control. Obviously such a classification is based on the object of the magical rite or act. The first class refers to the endeavour to ward off impending danger, disease, or other calamitous happening. The use of charms and amulets is a frequently employed device for this purpose. The use of spells may have a similar end in view. In India the names of certain deities are believed to have the power, when pronounced, of averting troubles, as e.g. Arjuna to avert being struck by lightning. The second group, viz. curative devices, are employed to get rid of disease and trouble which has not been averted. There is quite a minutia of devices practiced with the object of restoring health, transferring disease, overcoming defilement and curing poison bites. Contagious magic in this classification means trying to bring about a particular effect by another act which resembles it on the principle that like produces like or that magical power is transferrable. The rain-making ceremony of pouring water on the roof to resemble rain is an example. The torturing of an effigy made to resemble an enemy in order to make him suffer is of the same type. From the psychological viewpoint all magic is a device for control, but in this fourth class the phrase is used in the more restricted sense as control of the weather, control of evil spirits, control of the power of fertility, or control of the magical power itself as in counter-magic.

The classification of magic adopted by Prof. E. S. Ames is (i) imitative magic, (ii) sympathetic magic, and (iii) direct magic. Imitative magic he illustrates by the rain-making ceremony. Sympathetic magic he exemplifies as a type of procedure whereby the savage tries to obtain possession of something which has belonged to another person in the belief that the object shares in the life of the person. Consequently if the savage eats the nail pairings of a brave man, he thinks he will thereby assimilate the hero's bravery. Direct magic is identified with a belief that people and objects may be directly affected. Much of the belief in good and bad omens partakes of this character. The operations of the evil eye are of the same type.

Another possible classification is on the basis of the motive involved, whether beneficent or maleficent. The former has been designated 'white magic'; the, latter 'black magic.' The motive of white magic is to secure some benefit such as the cure of a disease, the averting of a calamity, the obtaining of good luck, the satisfaction of a felt need, or the securing of a control for a good end. Black magic, sorcery or witchcraft is employed to inflicit injury, disease or death on an enemy. The means used for this purpose are various, such as curses, assumption of the form of an animal to injure, homoeopathic methods such as injuring an

image which is made to represent the enemy, or by a direct transfer of magical force. There is a mistaken notion in some circles that all magic is black magic, but this is due to a failure to understand that magic is a mechanical attitude using occult means for any purpose rather than one employed only with evil intent.

The question is sometimes asked as to whether magic is purely individualistic or is ever social. Probably the safest ground to take is that sometimes it may be the one, and sometimes the other. Whenever it is employed by an individual to secure a personal benefit or to wreak personal vengeance it is individual; whenever it is performed either by, or on behalf of the social group it is called collective magic. This raises a rather fine problem which is really due to two uses of the concept 'social.' When we describe magic as 'collective' or 'social,' we mean that it is used for the benefit of the group, and examples of that type of magic are numerous. Magical rites for the control of the weather, for the suppression of disease, to insure good crops or a plentiful supply of food, and to be assured of victory in battle may all of them be employed in a collective way. But the power manifest in tabued words, mantras, curses, witchcraft, bad and good omens, defilement and lustration, the cure of disease and poison bites, and the like operates individually. On the other hand in describing magic as 'non-social' or 'anti-social' the meaning is that social is the antithesis of mechanical, that the habit of mind and the method adopted for accomplishing the end in view are always the mechanical as opposed to the social which is characteristic of religion and morality. Some writers have attempted to differentiate magic from religion on the basis that the former is individual and the latter social. W. Robertson Smith believed that "it was the community, and not the individual, that was sure of the permanent and unfailing help of its deity. It was a national, not a personal providence that was taught by ancient religion. So much was this the case that in purely personal concerns the ancients were very apt to turn, not to the recognized religion of the family or of the state, but to magical superstitions. . . . A man had no right to enter into private relations with supernatural powers that might help him at the expense of the community to which he belonged."[17] Prof. E. S. Ames quotes. Smith approvingly, the advantage of the distinction to him being its clearness and distinctness.[18] To be sure "it does not involve the highly wrought metaphysical discriminations" that other writers have supposed. On the other hand it seems to assume that discriminations among primitive peoples were more clear and simple than the facts would warrant. The truth is that magic and religion were inextricably intertwined among the ancients, and the distinctions between the two are the achievements of the subsequent discriminations of cultural man. Even our own differentiations on the basis of mental attitudes and their concomitant techniques do not propose that we can go back over the ground of primitive beliefs and rites, and make clear-cut separations into two classes. Much of the data which we have to examine belongs to both classes, and consequently is differentiably neither.

[17] The Religion of the Semites, pp. 263, f.

[18] The Psychology of Religious Experience, pp. 79, ff.

Dr. Marett puts it: "If from one point of view magic and religion must be held apart in thought, from another point of view they may legitimately be brought together."[19] The fact is they must be brought together because they so frequently exist in collusion.

Frazer has already been quoted as describing magic in terms of "spurious science." In another passage he speaks of "the fatal flaw of magic" being "not in the general assumption of a sequence of events determined by law, but in its total misconception of the nature of the particular laws which govern that sequence." These fundamental laws of thought which magic rightly assumes are the two laws of the association of ideas, viz. by similarity and contiguity, the error being in a mistaken application of them. He continues: "The principles of association are excellent themselves, and indeed absolutely essential to the working of the human mind. Legitimately applied they yield science; illegitimately applied they yield magic, the bastard sister of science. It is therefore a truism, almost a tautalogy, to say that all magic is necessarily false and barren; for were it to become true and faithful, it would no longer be magic but science."[20] Prof W. Wundt is quite opposed to the theory of Frazer that magic is the outcome of mistaken notions of the principles of natural causation. With respect to the idea that "is even to-day widely current that mythological thought was from the very beginning a naive attempt at an interpretation of the phenomena which man encounters in nature or in his own life," he says that "this innate need for explanation is then usually associated with an alleged *apriori* principle of causality inherent in the mind. The mythological view of nature, therefore, is supposed to be nothing but an application—imperfect as yet, to be sure—of the causal law to the nexus of phenomena. But if we call to mind the condition of natural man as revealed in his actions, no trace can be found of any need for explanation such as requires the initial employment of the concept of causality. Indeed as regards the phenomena of daily life and those that surround him on all hands and constantly recur in a uniform manner, primitive man experiences no need at all for explanation. . . . It is not intelligence nor reflection as to the origin and inter-connection of phenomena that gives rise to mythological thinking, but emotion; ideas are only the material which the latter elaborates."[21] According to Wundt's view regularly recurring events are accepted without questioning. It is the unusual and the extraordinary which demands an explanation, and this is found in the will or soul-power of a human being, a fetish, or a deity.

There is a certain amount of affinity between magic and science which must be recognized. For one thing several of the sciences have forebears in the domain of magic. Astrology preceded astronomy; alchemy came before chemistry; witchcraft before medicine; animism before psychology. This is the sort of fact that undoubtedly led Frazer to think of magic as "bastard science," and Tylor as "occult science." But there must be a reason for so many sciences having their roots in

19 The Threshold of Religion, p. 72.

20 Op. cit., pp. 49, 50.

21 Elemente der Volkerpsychologie; English translation by Schaub, pp. 91, ff.

magical behaviour. One attempt to account for it is in the theory that the phenomena of our environing universe are determined by laws, mistaken views of which give us magic, and correct ideas of which yield science. Hence magic is pseudo-science. Such a theory presupposes that a law of nature is a determining principle of the phenomena of nature which exists idependent of and antecedent to the phenomena themselves. But it is more precise to think of a law as a description of certain phenomena, and to recognize that the history of the sciences discloses constant modifications of laws as knowledge grows. It would be better to say that magic makes a wrong induction because of insufficient data from which to judge. It is the extraordinary and the unusual which attracts the magically minded, but it is the regular and normal which the scientifically minded observe. It is the task of science to explain by placing an event in a causal series, or at least in a temporal series. In that sense magic, which declares that one event is on account of another because after it, is a primitive form of the causal category. It is not pseudo-science, but pre-science. The aim is not explanation or interpretation, but control. Magic may be describied as pre-science because of the resemblance between the mental attitudes and techniques of it and science. In both cases the essential matter is that they are the outcomes of a mechanical attitude, and that the manipulation of data is mechanical. The procedure in each case is the setting free of a power which will function of itself as soon as the necessary conditions for its functioning are established, the difference being that the magician regards such power as occult, whereas the scientist regards it as a definitely calculable capacity for doing work. The typical terminology of the magician is *mana*; that of the scientist is *energy*. The fact that scientific knowledge has so often historically displaced magical knowledge need not blind us to the functional significance of the latter in man's struggle to attain dominion over his environment. Both magic and science seek to control the operative conditions of the phenomenal world. But, as Prof John Dewey has indicated, science does so with an intelligent understanding of the "intermediate conditions of nature" whose co-operation is requisite, whereas magic supposes that the end can be achieved "without intelligent control of means."[22]

It is important that we recognize magic to be a powerfully suggestive and functioning means of control and influence in primitive society. To regard it as a form of superstition imposed by deception and sustained by fraud is quite to misunderstand it. No people ever invented a superstition as such. A magical belief may pass into the category of the superstitious after it has ceased to function, but originally it arose in response to a felt need, and was used because primitive man knew no better means for attaining his desired end. Fortuitous associations attract the attention, and the more uncommon the greater the degree of attraction. The unusual is easier to remember; the regular and normal is easier to forget. Once a magical association has been made, the tendency is to overlook or explain away the exceptions. It is usually possible to point to some detail of the conditions that has been disregarded, and to say that such an omission is sufficient to

[22] John Dewey: Human Nature and Conduct, pp. 26, f.

account for an exception. The striking thing is that the more sophisticated the believer in magic, the more facility he shows in accounting for apparent failures. It is very rarely among primitive peoples that the magician himself is an out-and-out fraud. He usually has a firmly established confidence in himself or in the power which he is able to control. And the people believe in him, fear him, and at times reverence him for his power. Were it not for the real functioning power of their faith and fear, he would soon be deposed. But on the contrary he is in some groups the most feared man of the entire community, and the man whose help is most highly valued in time of need. No one who has had anything to do with people who believe in and practise magic can have any doubt about the reality of its functioning power.

One of the bewildering features of magic is the tremendous variety of forms which the beliefs and practices take. There is no interest of life that has not at some time been associated with it. There are no occasions which have not been accorded magical associations. One cannot think of an object or force of nature that has not been made an object of magic. Neither do the products of the social life escape its reach. Objects physiological and objects psychological alike come under its scope. Inanimate matter, vegetable life, animal life, human beings and even the gods are made subservient thereto. Conscious life and dream life both bow to its sway. Crime and pestilence, disease and death are all due to its power. Adversity and prosperity are both its children; good luck and bad luck are alike its progeny. Magic penetrates everywhere; overpowers everything; "is no respector of persons." The scope of its penetrativeness and the variety of its forms make it very difficult of definition. Like government, religion and science it is a collective word; a concept rather than a percept; a universal rather than a particular. As, already indicated, it is a way of thinking and a way of acting rather than a collection of thought forms or overt actions. It is best described as a habit of mind which views the environment as susceptible to coercion by occult means, and proceeds to the exercise of such coercion for definite ends.

A Historical Sketch of Telugu Literature.

By T. Rajagopala Rao, B.A., L.T., M.R.A.S.

CHAPTER III.

From the Age of Nannaya to the completion of Mahabharata.

Nannaya was not the only poet of his period, nor was his Sanskritized System of prosody his own original creation. The prosody as seen in Nannaya's Mahabharatam, is but a true copy of what Kanarese had effected for itself two centuries before this age, in its earliest extant work, *Kavirajamarga*, written by the famous Rāshtrakūta Emperor, Nṛpatungadeva (A. D. 814-877). The only difference between Kannada and Telugu types of Sanskritized prosody is in this, that there is what is called a *vadi* in Telugu. The Sanskritized type of prosody which was perfected in the Kanarese language by Andhra poets like Adipampa, Ponna, and Ranna, was, with the change indicated above, taken up by Nannaya and all the later Telugu poets.

Almost contemporaneous with Nannaya, lived the famous Pavuluri Mallana, a Saivite poet, who wrote an excellent work on Mathematics, *Dasaganitam*. A number of manuscript copies of this book tell us that its author received gift of a village, Navakhandavada, from King Rajaraja, the patron of Nannaya. The testimony of a very few Mss., that say that it was the poet's grandfather who received the gift, is yet open to doubt. Our poet, Mallana belongs any way almost to the time of Rajaraja, even if the gifts of Rajaraja was made to his grandfather. *Dasaganitam* has the reputation of being the text book invariably taught to school children for over eight centuries until English education supplanted the ancient system of teaching. Pure in language, precise in expression, extremely clear and lucid in its exposition, and containing all the graces and beauties of poetry without any orthodox flaw, *Dasaganitam* was more a book of real poetry, though it is not the less a technical work on mathematics. It is but a genius that can treat an abstract science with such life, and sustained interest. The mathematical sums in this book are taken from nature and poetically expressed in relation to life. The technical principles of mathematics are adapted from Mahavira's Sanskrit work, *Ganita Sara Samgrath*, but the exercises under each principle, so full of beauty and life are all Mallana's own. Of the important poetical works on mathematics in Telugu, namely, Mallana's *Dasaganitam*, Vallabha Amatya's *Līlāvatī Ganitam*, Peddana's *Prakīrṇa Ganitam*, and Venkata's *Venkatesaganitam*, Mallana's is the earliest and the best. Like all ancient works, *Dasaganitam* begins with a Sanskrit, *slōka*. There is no praise in it of poets, ancient or modern. With a dignity of language and style, the author leads us on to the end and there is no wonder, if a book that combined so successfully the technique of a necessary science, (*viz.*,

mathematics) and the art of poetry in one, remained for centuries, the most popular book in the country, compulsorily taught to every school-going child. Pavuluru, a village near Rajahmundry in Kammanādu, is the famous place of its production. Its author belonged to the Apastamba Sutra, and to the Gotra of Gargi. A stanza from *Dasaganitam* may be translated below :—"Of the soft lotus stem, the King Swan gives a sixth to his mate, and a fifth of the remainder to his friend. A fourth of what is left, he allows for his child, and nine spans, which is the surplus, he takes for himself. Ye! who are praised by good men! Will ye tell us the length of this stem?"

Maharajadhiraja Nannechoda Tenkanaditya, generally known as Nannechoda is the first among a clan of famous Saivite Telugu poets, who left a mark on this language. His great work *Kumara Sambhavam* is one of the very few books in Telugu, that can stand comparision with similar works in any language. The age of this royal poet is still unsettled. About A. D. 940 is the earliest date that has been assigned to him, and A. D. 1153 the latest. There is much to show that Nannechoda must have been a very early poet,—even earlier than Nannaya. Forms like *Pōnka* and *Sōnkina*, (*poka* and *sokina*) which were archaic even during Nannaya's time have been freely used by him, while the number of archaic words, (so archaic that even Nannaya did not use them), in his poetry is very large. It is said that Saivite poets take some license in this matter, but the question seems to be deeper than that.

Nannechoda tells us that while Sanskrit poetry was existing in the Telugu country, the Chalukyan Kings encouraged poetry in *desi* (poetry in the language of the country) and that he prefers the *desi*, to wit, *Janu Tenugu*. In the twelve canto of his *Kumara Sambhavam*, the richness of detail with which he pleases his readers is surprising, and the vividness and width of his imagination in tackling scenes of nature is hardly surpassed in any language. Nannechoda is a poet of nature. The eighteen *varnanams*, the ten *prānams*, the nine *rasams*, and the thirty six *alankarams*, have as set forth by him in his introductory stanzas been worked up by him to such effect, that one wonders how a king ruling over men should be able to develop poetic art to such perfection. One of the main purposes of his book is to popularize the cult of Siva, and show that Vishnu is an inferior deity. As set forth by him in his introductory stanzas the story describes the birth of Sati and Ganesa, the destruction of the sacrifice of Daksha, the birth of Parvati, the terrible penance of Siva and Parvati, the oppression of the Devas by the Asuras, the death of Cupid, the penance of Parvati, her marriage with Siva, and the birth of Kumara. The first canto deals with the birth of Sati to Daksha, her union with Siva, the happy life of Siva and Sati and the birth of Ganesa. Daksha goes out to see each of his daughters at her husband's place. All treat him respectfully, but Siva, the husband of Sati does not regard him with becoming courtesy. Canto two begins with a determination on the part of Daksha to give a similar cold treatment to Siva at a sacrifice which he contemplated. Siva, however, would not attend that sacrifice, while with his permission Sati was present. Daksha openly expresses his contempt for Siva, and Sati attempts to vindicate her husband's greatness in all the

ways she could. Even the gods, Brahma and Vishnu acknowledge Siva, as their overlord, but this only irritates Daksha to further insult. This kindles the anger of Sati, and the flames of rage, issuing from out of her body, burn her up, reducing her to ashes. The news reaches Siva and and at his bidding, Daksha, the creator of the worlds was brought before him by the Ganas. Daksha now realises the greatness of Siva, and the canto closes with a sincere praise of Siva, by Daksha. In canto three, Sati is born to Himavan and Menaka and takes the name of Parvati. The sage, Narada, foretells her future marriage with Siva. In the meantime, Siva leaves his abode Kailasa, and settles himself down near Himavan, where Parvati is engaged to assist him in his penance. The language and style of the poem becomes exceedingly beautiful from the beginning of canto four, and the graces of diction grow in increasing splendour from this canto to the end of the twelth canto. Canto four begins with the sufferings of the Devas, due to their oppression by Tarakasura. Brahma advises;them to induce Siva to marry Parvati, as it was ordained that only their son should kill Taraka. The lord of the Devas entreats Cupid to disturb the austerities of Siva, and Cupid starts out with all his retinue on this his fatal journey. Vasanta, (the spring season) goes in advance of Cupid to prepare the way for his master to defeat the penance of the lord of the universe. The poet gives a description of the spring here, one of the most beautiful in all Telugu literature. Canto five speaks of the attempts of Cupid to turn the mind of Siva, from asceticism to the enjoyment of wordly pleasures, and of Cupid's death in the encounter. Rati, the wife of Cupid, bewails her husband's death, and the gods advise her to attend on Siva with due devotion, until he is pleased to bring her husband back to life. The rest of the canto gives a lengthy account of Parvati's wish and eagerness to marry Siva. Canto six has again many pieces of description unrivalled in the whole range of Telugu literature. Parvati's condition is reported to her father, and her desire to undergo server penance in a forest fastness to deserve the hand of Siva has been accepted. The description of her journey into the forest fastness, and the life and conditions there are so exquisite and captivating that the reader looses himself in high emotions there. A sage blesses Parvati with a mantram, that would ensure success for her enterprise, and the severe austerities she undergoes are quite in keeping with the great boon she wishes to obtain, *viz.*, of deserving to be the queen of the Lord of the worlds. The physical and mental discipline that deserve the grant of the boon are nowhere dipicted so poetically, yet with such natural truth, that Nannechoda's work is here simply beautiful. In canto seven Siva grants the boon to Parvati and she returns back to her father's home. The rest of the story covering the remaining half of the book may be briefly told, The marriage is settled in canto eight, and Siva is married in canto nine. The birth of Kumara, his fight with Taraka, and the death of the latter are described in the remaining three cantos.

The poetry of Nannechoda flows with uninterrupted rapidity from scene to scene. His is a feeling expression of great events. He stirs up our emotions to their highest pitch. He does not pause to weigh a word, but the emotion brings with it, its own language, to produce its maximum effect. In the fine imagery that

he presents, only one poet deserves any comparison with him, namely the great Sanskrit poet, Valmiki, and yet Valmiki is high above all the poets. Nannechoda is a poet of nature and where other poets can see but the surface of it, his poetic imagination so subtle, yet so penetrating, gives us dozens of enrapturing images, that one wonders how nature is so full of life and meaning. *Kumara Sāmbhavam* is the *Paradise Lost* of the Telugu language; only the theme is set in an oriental atmosphere, under oriental conditions. In richness of thought and variety of natural imagery, *Kumara Sambhavam* has no equal in the whole range of Telugu literature, though in the laboured diction of some of the latter day poets, artificial imagery may be seen plentifully. Nannechoda, the king of kings is also a king of poets, and his gifted work *Kumara Sambhavam* is a glorious production, which any language can be proud of.

Moral poetry in Telugu begins with the Kakatiya line of kings of Worrungal in Telingana, of whom, Prataparudra, (1117-1140 A. D.) wrote *Niti saramu*. It is from Prataparudra, that another Saivite Telugu poet, Palkuriki Somanatha, received gifts of many villages. Nannechoda, Palkuriki Somanatha, and Mallikarjuna Panditaradhya are the three great Saivite poets of ancient Telugu Literature, who made some innovations in Telugu prosody and grammar, which were not acceptable to the other poets The use of *prasa yati* in *dwipada* meter, the liberty they took with of double consonants in rhyme, where they compounded only with one consonant, and free use they made of *misra samasams*, where Telugu and Sanskrit words were compounded together without the necessary grammatical changes, are taken as some of the defects of Saivite poetry in Telugu. Of Somanatha's Telugu works, *Basva Puranam* is the most important. This and his *Panditārādhya charitram* are written in the *Dwipada* meter, which his *Anubhavasaram* is written in the usual meters of Telugu Poetry. A story is told of this poet, that when his *Basava Puranam* was being read and explained to the masses in the open street, King Pratarudra was passing by. The crowd attracted the king's attention, but the Brahmans, out of religious jealousy decried Somanatha's work so vehemently that the poet was forced to go to Worrungal to vindicate his faith against his Brahman opponents, whom he had put down in the Kakatiya territory, and established Veerà Saivism there with the king's assistance.

Of the *Basava Purāna* of Somanatha, Mr. E. P. Rice says "A source of information, nearer to the time of the occurrences than any of these should be the Telugu *Basava Purana* of Palkurike Soma (c. 1195) if it is extant."[1] The fact is that the Kanarese *Basava Purana* is one of the most important books of Kannada Lingayat Literature, but, as the work was got up in A.D. 1369, required for the corroboration of its facts a book, written near to the time. Somanatha was the son of a direct disciple of Basava[2] and his *Basava Puranam* is almost a contemporaneous work that helped this corroboration. Basava belonged originally to the Godavari District and thence he migrated to Mysore, where he embraced the Veerasaiva faith. His Telugu *Basava Puranam*, and *Panditaradhya Charitram* are source books for similar

[1] Mr. K Nagaswera Rao, Madras, is now printing Somanatha's Basava-Puranam.

[2] In his Panditaradhya Charitram, Somanatha calls himself the son of Basava. (Basavesasya tanayah). It may be that Guru being one of the five fathers, Somanatha takes Basava as such.

works in Kanarese. Soma is himself an authorititative Kannada author in which he wrote *Saranu Basava Ragale*, *Sadguru Ragale Chennabasavada Stotra Ragale*, and other works. As Basava became the subject of Somanatha's work, Somanatha became the subject of another Lingayat Kanarese work, the *Palakurike Somesvara Purana*, written by Virakta Tondacharya in A. D. 1560. A Satakam of one hundred stanzas, in Telugu, the *Vrshadhipa Satakam* also goes by his name.

But Saivism did not thrive well in the Telugu land. Their religion and philosophy, and even the very language of their works was severely criticized. The Brahmans and the Saivites persecuted each other. We have seen how Somanatha was derided by the Brahmans, and how with the help of Prataparudra, (and his minister Induturi Annaya, a disciple of Somanatha), he was able to crush their supremacy and establish Lingayat worship at Worrungal. Later Telugu works, such as Srinatha's *Aradhya Charitra*, and Piduparti Somanatha's *Basava Purāna*—both of which are renderings into Telugu Poetry of our poets Dwipada versions of books of the same name—refer to the hard persecutions of the Saivites at the hands of the Brahmans. But for Brahmanism to take deep root in the Telugu country, rich Brahmanical literature was urgently needed, and Ranganadha took up this work in his famous *Ranganadha Ramayanam*, which imitated Somanatha's work in the orthodox *dwipada* meter which it adopted. The name *Ranganadha Ramayanam* is a matter of controversy. Just as the Ramayana of Valmiki is popularly known as Valmiki Ramayanam, we have in Telugu a number of Ramayanams by the latter day poets, each of which goes by the name of the author. We have thus *Molla Ramayanam* written by the lady, Molla, *Bhaskara R myanam*, due to Bhaskara. Is Ranganadha the author of *Ranganadha Ramayanam?* In the introductory portion of this great work, and at the end of every *Kāndam* in the text, we findt hat king Kōnabuddha narrated this story in the name of his father, King Vitthala. If Kōnabuddha be its author, why should this book be named as *Ranganadha Ramayanam*, and not as *Kōnabuddha Ramayanam?* The fact gains additional strength when we see that latter poets very often referred to Ranganadha as its author. There is no doubt that Ranganadha wrote this Ramayanam but the religious purpose which underlay its production required strong royal support which must explain the retention of its title as *Ranganadha Ramayanam*. Kōnabuddha belonged to A. D. 1230.

Ranganadha Ramayanam is an abridged version of Valmiki's Sanskrit work, with a few alterations here and there. The language is simple and easy flowing, and it dipicts Rama as a god, far above the other gods. In style and poetic beauty there is no comparison between Nannechoda's *Kumara Sambhavam*, and the Ramayanam of Ranganadha, but the language of this dwipada work is more simple and homely than that of Nannechoda to educate the masses. The one exhibited great scholarship and a very high poetic genius, while the other, though not lacking in poetic merit, did not spend itself in flights of imagination, and in high flown style. A huge work, full of events had to be condensed by Ranganadha to within readable limits, and a high style full of Sanskrit compounds was suicidal to the purpose that he had to serve. Ranganadha's language is pure without a flaw,

and his usage is generaly quoted by latter grammarians as an authority in matters of grammar and language.

We next come to Ketana Mantri, who translated Bana's *Kadambari* and to Kavibhallala, who wrote *Vikramarka Charitra.* Their books are however lost to the world like the *Ragava Pandaviyam* of Vemulavada Bhimakair, though all the three are authoritative poets, often quoted by later grammarians.

Tikkana, better known as Tikkana Somayaji is considered to be the greatest of Telugu poets, just as the poet of Andhra descent, Pampa is considered to be the greatest of Kannada poets. The translation of Mahabharata, which was begun more than two centuries before was still incomplete, and Tikkana had the glory of completing that voluminous work, all but a half of the *Aranya Parvam.* The completion of the Mahabharata amounted to the production in the Telugu language of a complete book, furnishing every aspect of Hindu religious thought and belief,—all that was left atter it being but the exposition of it to the public at fixed times every day throughout the country.

Tikkana belonged to a noble family. His father was the commander of the king's forces at Guntur, while his grand father, Mantri Bhaskara celebrated for his liberal gifts, was the chief of Guntur. Two accounts of Tikkana exist in the Telugu language, one in *Siddheswara Charitra* otherwise known a *Pratapa Charitra,* by Sarvappa and the other *Somadevarajiyam* by Jaggakavi. The former is written in the *dwipada* meter, while the latter was written in the usual meters of the poets. We learn from these, and from other sources that Tikkana was for a time the minister of king Manumasiddhi of Nellore. King Manuma lost his kingdom owing to the intrigues of his relations, when Tikkana proceeded to the court of King Pratapa of Worrungal and pleased him by an exhibition of his scholarship. He then invited the Buddhists of the place to a religious controversy with him, and, defeating them by his arguments, ordered their temples to be demolished. Pratapa, pleased with the work of this Brahman scholar rendered assistance to Manumasiddhi and reinstating him on his throne, gave him a gift of two thousand five hundred villages. A. D. 1250 is thus the date of Tikkana and we thus see that the translation of Mahabharata begun during the Rajaraja (A. D. 1023-65) could not have been completed till about the middle of the thirteenth century.

Tikkana's first work in the Telugu language is *Nirvachanottara Ramayanam,* which he dedicated to his patron, Manumasiddhi. This is a rendering of Uttara Ramayanam into poetry as different from dwipada. While the poetical works in Telugu are here and there interspersed with prose, Tikkana tried to introduce an innovation into the language by writing entirel in poetry, to the exclusion of *vachana* (prose). The title Nirvachana simply means in the context 'without prose.' A story is current in the conntry that Tikkana was leading the life of a profligate at Benares, when ceratain servants of king Rajaraja brought a stanza of Nannaya to him, which he rewrote and coloured with the *pan supari* that he was chewing; and that Nannaya, to whom the stanza was brought back thought that Tikkana thus proved himself to be fit to translate the Mahabharata. This is however a story, that confuses the dates of those poets and makes them contemporaries. It has no truth in it.

By the time of his translation of the Mahabharata Tikkana became a Somayaji, i. e., one who performed a sacrifice. The colophon in his Ramayana reads as Tikkana, while in the colophon for his Mahabharata we read of him as Tikkana Somayaji.

Tikkana's style is not so flowery as that of some of the poets, but his expression is so eloquent, his exposition so clear and lucid, the words he uses so precise apt and forceful, his diction so flowing, his style so full of life and pathos, and his language so simple and easy, that his ideas make a lasting impression on our minds unconsciously converting us into his belief. He sustains our interest throughout the book, and there are hardly any portions, which are dull and insipid. His method of translation is exactly like Nannaya's—free, but not literal. He omits many theories from the original, and adds many new ones. Tikkana has aptly won for himself the title of Kavi Brahma, and there is no work in the Telugu language that can make even the nearest approach to his Mahabharta. The descendents of Tikkana still live at Patur in the Nellore district, and a steel style is preserved by them, whice they say is the style with which Tikkana wrote his Mahabharata.

Contemporaneous with Tikkana Somayaji, lived another poet, Mulaghati Ketana, who wrote three works in Telugu, *Andhra Bhasha Bushanam*, *Dasakumara Charitram*, and *Vignanesmeriyam*. "It is impossible," he says, "to please Tikkana by writing poetry; but I have done it, and that is my glory." *Andhra Bhasha Bhushanam* is the earliest Telugu Grammar now extant. It contains but a few rules of grammar. *Dasakumara Charitram* is an adaptation of Dandin's Sanskrit work into Telugu poetry, for which Ketana obtained the title of *Abhinavadandi*. *Vignanesmeriyam* is an epitome of the Sanskrit *Yagnyavalkya Smriti* in Telugu poetry. Of these *Dasakumara Charitram* is his best produciion and it is really so beautiful as to deserve the praise of Tikkana.

One of greatest of Telugu moral poets, was Baddena, who wrote *Nitisastra Muktavali* and *Sumati Satakam*. Like Nannechoda, Prataparudra, Kona Buddha and others, he also was an Emperor-poet, whose *Sumati Satakam* is a standing monument to his moral wisdom. Like the stanzas of Vemana, the stanzas of *Sumati Satakam* have become proverbial in the Telugu country and have entered into the life of the nation. Baddena ruled over the southern *six thousand* country, about A. D. 1261 and had the title of Mahamandaleswera. His *Nitisastra Muktavali* is a treatise on the duties of the king and is divided into fifteen sections, each dealing with one aspect of the king's conduct. At the end of every stanza, he like Vemana, addresses himself with expressions like 'Oh! King Badda, Oh Nannaya Gandhavāranā', &c.

We next come to Yerrapraggada, otherwise known as Prabandha Parameswara. The second half *Aranya Parva* in the Mahabharata, yet left incomplete, was completed by him, and Yerrapraggada thus becomes the third, in the trio of authoritative Telugu poets, to whom the Mahabharata owes its glory in Telugu. Yerrapraggada's method of translation was similar to that of Nannaya and Tikkana. *Harivamsa* was another work translated by him. It was dedicated to the Reddi King Golaya Vema (A.D. 1320-1349). *Nṛsimha Puranam* and *Ramayanam* are his

other works of which the former was dedicated to god Ahobala, and the latter to Polaya Vema. The language and style of Yerrana are simple and elegant, and the fact that his other works have lived through six centuries is a fact that proves their merit.

It thus took three centuries for the Mahabharata to be completed. The attempt of the Saivites to introduce their religion into the country failed completely, while Brahmanical culture took deep root in the land with Advaita Philosophy and an increasing devotion for Rama and Krishna. The age is essentially an age of translations the only original work of the time, being Nannechoda's famous *Kumara Sambhava*, which is one of most glorious productions in the Telugu language. We shall in the sequel see what other translations were made into the Telugu language until Potana and Srinadha breathed new life into it, perfecting it by the richness of vocabulary and thought.

The Budget and Education.[1]

By the Rev. W. Meston, M.A., D.D.

The present meeting affords us an opportunity of reviewing once again the Budget of the Government of Madras in so far as it affects education. The full figures are given on pages 192 to 238 of the Civil Budget Estimates for the year 1925-26. Interesting notes are to be found on pages 40 to 42 of the Budget Memorandum. We shall confine ourselves, as formerly, to a consideration of the provision made for general, as distinct from professional and special, education. Our review will deal with University, Secondary, and Primary Education, and the Inspection of Education. It will close with a few general conclusions.

A.—University Education.

We are concerned with the allotments under this head which are made in respect of general education; and in the Budget there are three such items :—

	Rs.
Grants to Universities	1,52,800
Government Arts Colleges	9,28,700
Grants to non-Government Arts Colleges	4,63,700

The most that can be said with regard to the University is that so far it is costing the tax payer very little. The amount budgetted for is an addition of only Rs. 37,300 upon last year's estimate, and the total is so small as to lend itself readily to misconstruction. This would be unfortunate. For the meagre sum must not be taken as an index of the government's interest in the work of the University. Within the year, the rules relating to the payment of grants have been satisfactorily arranged, and the professorship of Indian Economics has been placed on a permanent footing. When the University is prepared to embark on a programme of expansion there is no doubt that the needed money will be forthcoming. There is some prospect that an Institute of Advanced Oriental Studies and Research may be established within a year or two and may thus remove from the University the reproach of evincing little interest in those subjects which come most appropriately within the sphere of its investigation and encouragement. But before the University of Madras as defined in the Act of 1923 becomes a really effective place of learning its present affiliating functions must be reduced to a minimum if not wholly abrogated. And it is worth while noting that the heading which in previous budgets read 'Grant to University' now reads 'Grant to Universities.' The Andhra University Bill has been introduced into the local Legislative Council, and the hope of all

[1] A paper read before the Missionary Educational Council of South India, Aug. 22nd, 1925.

interested in the advance of higher education is that the Act which will emerge may be the means of establishing in the northern portion of this presidency a strong and influential University. The missionary societies concerned have taken time by the forelock and have their plans ready so that they will be in a position to take their appropriate share in the life and administration of the new University. The Report of the Committee on the Travancore University has been published and is interesting reading. We anxiously await the action which will be taken on it. Another scheme which may soon claim our attention is the proposal to utilize certain religious endowments for the establishment of a Hindu University near Tirupati. The whole situation calls, in my opinion, for a very definite review of the part which missionary societies are taking in University education. Conditions have changed very greatly within the last three years and every change seems to me to make a more and more definite appeal for concentration. But this matter would require a paper for itself, so we may now turn to the next item on the Budget.

The expenditure on Government Arts college is estimated to be Rs. 9,28,700 as against Rs. 8,86,300 of the preceding year, a rise of slightly over Rs. 40,000. The grants to non-government Arts colleges for which provision has been made in the budget total Rs. 4,63,700 an increase of a lakh on last year's estimate. Now regarding these figures let us pay attention to the following points. (1) The 10 government colleges are attended by, in round figures, 2500 students. the 33 non-government colleges by 7500. The colleges which provide instruction for one quarter of the students of the presidency cost from public funds Rs. 9,28,700, the colleges which provide for three-quarters of the arts students of the presidency receive in aid from public funds Rs. 4,63,700. Thus the cost of the agency which supplies the quarter is double the cost of that which supplies the three-quarters. (2) The teaching grant voted in the Budget for non-govenment Arts colleges is a lakh and a half, the amount paid for what are known as the 'officers', i. e. those in the I.E.S. and M.E.S., in government arts colleges under the head of salaries is Rs. 3,95,000. Thus the work of all the teachers of non-government colleges is at the service of the young men and women attending colleges for a charge on public funds of much less than half that of the 50 government educational officers. And let it not be forgotten that under teaching grant to aided colleges is included office expenses, ordinary repairs, rents, taxes, contingencies. The 'Pay of Establishments' alone in government colleges is over 3½ lakhs. (3) The salaries of these officers is only Rs. 70,000 less than the total amount voted to non-government colleges for teaching, building and equipment. (4) The grant which aided colleges receive for buildings is Rs. 1,57,800. For the Umdabagh buildings Rs. 80,000 is included in the budget, and for a science block for Queen Mary's College Rs. 1,00,000. So that on two government schemes alone much more is being expended than is being given for the buildings of all the non-government colleges, and these two colleges between them are attended by some 300 students. (5) There is a welcome increase on the amount of grant given for equipment. Last year it was put down at Rs. 37,000 this year it figures as Rs. 1,46,500. But while there is now some indication that the State does wish to co-operate with private effort in the provision of books,

apparatus and material, the co-operation after all is on the meagrest basis. For, while it is not easy to find out details of expenditure in government colleges, or to be quite sure what is included under some of the headings, this at least is true, that the provision in government colleges for books, periodicals, apparatus and materials amounts at least to Rs. 89,300. So that even the greatly enhanced allocation to non-government colleges under the heading of equipment amounts to only Rs. 60,000 more than what is given to the few government colleges as part of their 'Contingencies' and part of their 'Supplies and Service'.

While readily admitting that as far as equipment goes the Budget is an improvement on last year I do not think that even its most sanguine supporters could regard it as at all satisfactory in the allotments that it makes to aided colleges for teaching and buildings. When the amount of work which is being done by these colleges is remembered the complete inadequacy of the grant of Rs. 4,63,700 hardly requires to be emphassied. When is the Ministry to *encourage* education ?

B.—Secondary Education.

The Budget allotments for Secondary Education are as follows :—

	Rs.
Government Secondary Schools	2,70,100
Direct grants to non-government Secondary Schools ...	10,43,800
Grants to local Bodies for Secondary Education ...	10,70,000

The figures follow much the same lines as last year. The amount given to Government Schools is Rs. 60,000 less than it was last year, while the grants to non-government schools have increased by Rs 60,000 and the grants to local bodies for their secondary schools has been increased by Rs. 1,40,000. It is difficult, from the Budget, to say with any assurance how the saving of Rs. 60,000 has been effected on government secondary schools, for many details which one would wish to have are not set forth. But there is one fact which strikes one at once, namely, that forty-five fewer temporary teachers and pundits are budgetted for than was the case last year, and the number of permanent teachers is also slightly diminished. How can such a diminution in the staffing of the government schools be effected without a considerable loss to the educational value of the schools? One government secondary school has been transferred to the management of a municipality, so the Budget Memorandum tells us, and the transfer may account for the diminution in the number of permanent teachers. But when all is said, we are left wondering whether a real saving has been effected. Passing from this aspect we may note four points to which the Budget allotments draw our attention.

(1) Government manages 37 secondary schools, attended by 10,000 pupils and receives from public funds Rs. 2,70,000 for their maintenance ; private effort manages 315 secondary schools, attended by 111,000 pupils, and receives from public funds Rs. 10,43,800. That is to say, private effort educates eleven times as many pupils as does government and the cost to the tax payer is not quite four times that of the

government schools, distinctly below the four times, if to the Rs. 2,70,000 in the Education part of the Budget there is added the amount charged by the Public Works Department for the maintenance of school fabrics. (2) Boards and municipalities manage 203 secondary schools, attended by 46,000 pupils, and they receive from public funds Rs. 10,70,000, while as already mentioned there are 315 secondary schools with 110,000 pupils under private management and the grant to them from general revenues is Rs. 10,43,800. On the face of it there is something unsatisfactory in this distribution. Boards and Municipalities have statutory powers to raise funds for educational purposes. The amount thus raised may be taken as corresponding to the amount which private managers put into education out of their own pockets. The grants or subsidies made to these forms of management should, one would naturally think, bear some relation to the contributions from their own resources which they respectively make. But this is not the case, as a reference to the Director's Report for 1924 shows. For while local bodies put the sum of Rs. 3,77,000 into secondary education and receive in subsidies Rs. 5,84,000, private agencies put in over Rs. 14 lakhs and receive in grants just over Rs. 9 lakhs. Then again one would think that the amount given would bear some relation to the work done. But, once again, this is not the case. For in regard to secondary education, private effort is educating much more than double the number of boys and girls that are being educated by local bodies and the grant which it receives is less than that allotted to local bodies. Let nothing be done to impair the educational efforts of boards and municipalities, indeed let everything be done to foster them. But let not the agency which is educating 66 per cent of the boys and girls attending secondary schools receive a treatment which is to its disadvantage and certainly shows no fostering care. (3) The amount allocated under the head of Building to Local Bodies remains unchanged from last year, while the allocation of non-government secondary schools is raised by Rs. 27,000. Against this rise for all secondary schools under private management set the expenditure of Rs. 68,000 on one departmental school, the Government Secondary School and Training School for Mistresses, Mangalore. (4) As regards equipment the secondary schools under private management receive an increase of Rs. 5,000 ; the allocation to Local Bodies is ten times what it was last year. The rise of Rs. 5,000 to private managers is less than the amount put down for 'Miscellaneous Contingencies' in government secondary schools whether for boys or for girls.

To this I would add one matter which should be raised in the interests of education and of expenditure thereon. Are the sums which are being spent on vocational education well spent? The recurring expenditure under this head is now up to Rs. 22,000 in board and privately managed schools together, while the non-recurring expenditure comes to nearly half a lakh.

I cannot pass from this part of education where the Budget does so much to depress the efforts of private managers without expressing the satisfaction that comes to me as I see an allocation of Rs, 5,700 for the Medical Inspection of non-government secondary schools. It is good to see that the State recognizes some responsibility in this all-important matter.

C.—Elementary Education.

The Budget provisions for Primary Education are as follows :—

	Rs.
Government Primary Schools	30,900
Direct grants to non-government Primary schools ...	32,000
Grants to Local Bodies for Primary Education ...	83,77,300

The following points are worthy of notice. (1) It is satisfactory to note that the Government policy of withdrawing from primary education is being given effect to. Two years ago the Budget allotment for government primary schools was Rs. 1,24,000 ; last year it was Rs. 39,400 ; this year it is Rs. 30,900. (2) Of the Rs. 83,78,000 allocated to Local Bodies, Rs. 53,00,000 goes to Boards and Municipalities, while Rs. 30,78,000 goes to District Educational Councils, which means that the former receive Rs. 5½ lakhs more than they did last year, and the latter not quite one lakh. (3) As has been reported to this Council, an endeavour has been made by Government to rectify the admitted inequality of last year so far as aided schools were concerned. Much leeway has still to be made up. (4) Government primary schools are attended by 46,800 boys and girls, board and municipal schools by 675,800 pupils, and primary schools under private management by 1,048,100 pupils.

D.—Inspection of Education

I am sorry to see that the amount devoted to Inspection is only Rs. 14½ lakhs, just half a lakh above the sum entered in last year's Budget estimate. As far as I can make out provision is made for one additional inspecting officer in the Women's Branch, and for one fewer in the Men's Branch. I pointed out the danger in 1923, of a diminished inspectorate and very little has been done to allay one's fears. I do not like the method of supporting the inspectorate by what the Budget enumerates as 'temporary' officers. I need add little to what I have already said regarding this educational provision. In the inspectorate we have the key to the situation, the real means whereby education may be advanced. Education cesses may be levied, and municipalities may adopt compulsory primary education, and discussion may continue over the S. S. L. C, but all these will be either futile or disappointing unless the matter of the inspectorate is taken up in real earnest. Much more money must be allotted for it and high professional qualifications must be demanded for admission to it, while the whole lines of service would stand a complete re-consideration. When efforts are made in these directions and satisfactory provision is made in the Budget we may hope for a real advance in our educational work. As far as boys' schools go I have one suggestion. One District Educational Officer is not equally at home in all the subjects of the Secondary School course while he may have special qualifications for one or two subjects, and his colleagues in surrounding districts may have the qualifications in subjects which he does not possess. Why should there not be a grouping of districts and a pooling of the inspectorial resources? This would not make any appreciable addition to expenditure, while it would add to the effectiveness of the work of inspection.

E.—Conclusions.

This is now the third time that I have had the privilege of passing in review before you the provision in the Madras Budget for Education. We have in this way considered the budget estimate passed by the Legislature in 1923, 1924, and 1925. There are certain points which stand out clearly as the result of these analyses.

(1) First and beyond any doubt Aided Education is not receiving its due. In a communication addressed to this Council on the 4th December 1924 this sentence occurs. 'The policy of government has always been to carry on the expansion of higher education as far as possible through the aided agency.' It is very hard to reconcile this statement with what the budget provisions contain. It is idle to send such a communication as that if the emphasis has to be placed on the words 'as far as possible.' The amount that is being absorbed by government schools may be reduced by a definite policy of transfer, the subsidies to local bodies which are out of relation to the grants made to aided bodies may be equalized by a definite policy of standardized aid to all bodies, local as well as private. There is nothing that stands in the way of giving the fullest expression to avowed policy. But whatever policy may be in the mind of government no one who goes carefully over the last three budgets could possibly assert, as far as financial support goes, that the policy of government is to advance higher education as far as possible through the agency of private effort. For the sake of the country and for the sake of the spread of education government must be given no rest till it sets itself resolutely to give effect to its own policy.

(2) It is equally clear that the whole Educational Department requires reorganization. At the present time it is overburdened. Every year makes it more difficult for those at the head of it to escape from details and routine and to devote themselves to policy and principles. In the present state of affairs such attention is what is being clamantly called for. We may do something to advance this end if we definitely raise our voices on two points.

(i) The appointment of the Director of Public Instruction as a Secretary to Government. His present position is anomalous. Surely the Director of Public Instruction is doing as much in the way of 'Public Works' for the presidency as the Chief Engineer of the Public Works Department, who is also a Secretary to Government.

(ii) The restriction by the Educational Department of its sphere of activity to that of Administration and Inspection. Then the Department will have some chance of shaping a stable educational policy.

(3) There is need for Government to adopt in all grades the definite policy of withdrawing from the management of schools and colleges. It is steadily following this policy in regard to primary schools the management of which it is transferring mainly to local bodies. It is hampered in carrying out this policy in regard to secondary schools by its management of training schools which require schools attached to them. But a generous policy of grant or subsidy would effect the transfer of these to local or private management. And the same policy would be

equally effective in regard to the transfer of colleges of general education. Professional schools and colleges would for the most part remain in the hands of government for some time to come, but even here a beginning might be made at once without disadvantage. Such a policy has two great merits : it sets money free, and it unifies the teaching profession.

(4) The greatest need is a strong inspectorate. The money budgetted for this object is at present wholly inadequate, and the cadre is (because of its smallness) set a task wholly beyond its powers. When government determines to restrict itself to administration and inspection under education, inspection will benefit at once, and the whole outlook of education will be brighter.

(5) A policy of grants-in-aid based on definite principles requires to be enunciated and adhered to. The budget shows that the present condition of affair must be changed. It will not do to avow a policy of grants-in-aid and then years later to bring in legislation which may hinder the execution of that policy. Local bodies and private managements engaged in education are equally rendering a national service. There must be an equality of recognition. That is what the budget does not show. And education all over the presidency is losing because of this. A general system of subsidies and grants based on service rendered and contribution made is urgently required in the interests not of managements but of education. And this might be secured by means of amendments to the Elementary Education Act, and by giving appropriate statutory powers to Secondary School Boards. How long are we to wait for this legislation?

We as a Council are believers in aided education because of what it means to the country. And if government is not able to give effect to its policy, as expressed in many official documents in the past and the present, it is for us to do everything in our power to uphold that policy and to advance it. And I submit that we can give Government the help that is required to make its policy effective by steadily pressing for four things :—a re-organized Educational Department ; the abandonment by government of its management of schools and colleges ; the establishment of a strong inspectorate ; and the institution of a generous system of grants and subsidies applicable alike to boards and private managements.

The Root.

By Sankara Krishna Chettur.

The rootlet quivered in the ground
  Beneath the stress of birth,
And communed with an aged root
  Attuned with the earth :
'I know my pain, I know my grief,
  O whither is the mirth ? . . .

'Lo, all my budding ecstasy
  Is stifled in the mould,
The Beauty I had hoped to live
  Is hidden fold on fold,
And Life's full wave pent-up in grave
  Of barrenness and cold.

'I hear you croon, I hear you sing
  Of raptures from above,
And a tremor of thrills your quiet fills,
  Branch-stirred by wind and dove :
I cannot see how solitude
  Can sing the song of Love.

'Each unseen leaf of you that springs
  Can kiss the Sun and Moon :
It knows the colours of the birds,
  The splendour of the noon,
And plays to every changing breeze
  An ever-changing tune.

'But we are both chained down below,
  I too will be a root ;
We may not live the upward grace
  Of the greenly-budded shoot,
Nor share the radiant rapture of
  Our very flowers and fruit.'

But the aged root loud laughed and shook
Its fibres to the grain :
'*We must not weigh the spirit in*
The scales of Loss and Gain,
For the rapture of the soul is born
Out of the womb of Pain.

'When you have learnt Love's sacrifice
In a life-unfolding throe,
And felt throughout your mother-heart
The call that mothers know,
You too will give your very life
And joy that it is so.

'For every throb of life that flings
Your beauty on the air,
Will sing the song of Service still,
Of tender-hearted care,
And your Love beneath will blazon forth
In flowers everywhere.

'And though both rain and sun may steep
Their glory to the view,
They may not drink their life-blood yet
From sun or rain or dew,
Until it has been transmuted
By all the Love in you.

'And when your grandeur is attained
Of fruited bough complete,
The ripeness of each hanging fruit
Is your full-flushed heart-beat,
And though it hangs against the sky
Does homage at your feet.

The nestlings that your branches know
Are part of the mothering tree,
For your mother-heart embraces all
Although it cannot see
Each feathered bliss, each speckled throat,
Each love-fed infancy.

'And though your sphere be hidden from
Where leaves and flowers fade,
Your spirit's constant interplay
Will know when they are dead,
And mourn for them with Grief that is
Through spring-faith unafraid.

'The very sod above your head
Is discipline of Life :
There is nor Grace nor Glory won
But is achieved with strife :
It is the hardness of the stone
That whets the finest knife.

'And learn of me the lesson that
The ages still have proved :
'*The Giver and Giving are greater than he*
Who by that gift is moved,
And everywhere the Lover than
The one who is Beloved.'

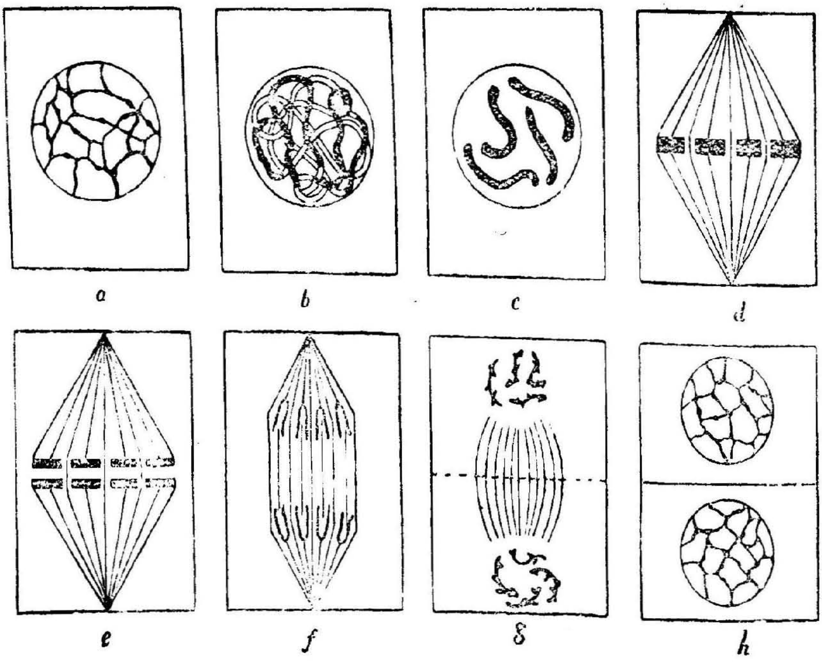

Diagram of Stages in Nuclear Division.

Genetics

By M. S. Sabbesan, M. A.

We know that children resemble their parents in several respects. When the members of a large family are carefully observed, we shall be struck with the varying degree of resemblance among them. This resemblance is, in popular language, termed heredity. But side by side with the resemblance there can be observed certain points of difference which help us to distinguish one individual of the family from another. By the term heredity should be meant the genetic relation between successive generations, and students of heredity are expected to explain, not only why it is that the offspring tend to resemble the parents, but also how differences between them happen to arise. When certain characters of the parents are noticed in the child, we are accustomed to say that the characters are transmitted from the parent to the child. It is essential to remember that what is transmitted is not the group of characters as such but a simple germinal substance which under proper conditions will produce an individual resembling the parent. The development of the individual is influenced to some extent by external conditions such as food, temperature, etc., and it is seen that certain changes in the environment can go so far as to prevent the expression of hereditary tendencies. Generally under normal conditions hereditary tendencies of the parent may find an expression in the children. The resemblance noticed among the members of a family may be of a morphological, or physiological, or psychic, or teratological nature. Stature, colour of the eye, form of the nose, etc., are morphological features. Bald-headedness, obesity, etc., are of a physiological nature. Feeble mindedness, genius, insanity, instinct, etc., come under the psychic features. Abnormalities in fingers, such as an increase in their number or the shortening of the digits or union of the digits, belong to the teratological group. Genetics is the science which deals with the problem of heredity, and it seeks to find an explanation for the thousand and one phenomena that are observed in the hereditary relation between successive generations.

It will be desirable to cite at the outset a few typical classes of facts to indicate the scope of genetics.

(1) " A gentleman had a peculiar formation of the right eye-brow. It was strongly arched, and some of the hairs in the centre grew upwards. Three of his sons have the same peculiarity; one of his grandsons has it also; so has his grand-daughter. This gentleman's grandfather and great-grandfather had the same peculiarity."

(2) There are two varieties of the four o'clock plant (*mirabilis jalapa*). One variety has white flowers and the other has red flowers. If the red form be crossed

with the white form, the resulting hybrid is purple. When the hybrids are allowed to interbreed, they produce descendants resembling the paternal types and also the hybrid type.

(3) Abnormalities in fingers are traceable through six generations.

(4) "A woman with blonde hair, a birth-mark under the left eye, and a lisp, married a man with dark hair and normal utterance. There were 19 children none of whom showed any of the mother's characters. Nor among the numerous grand-children was there any trace. In the third generation, however, there was a girl with blonde hair, a mark below the left eye and a lisp."

(5) Cases of families endowed with extraordinary intelligence and cases of families notorious for criminal tendencies have been put on record.

(6) Colour-blindness, a form of night-blindness, and hæmophilia or bleeding are seen to be inherited.

The student of genetics will have to tackle many questions of this nature, and it will be readily admitted that the problem of heredity is a complex one. This problem should be studied from different standpoints if complete and accurate knowledge regarding heredity be desired. For convenience the subject may be considered under four aspects :

(1) The aspect of mechanism,
(2) The aspect of the mode of transmission,
(3) The aspect of statistics,
(4) The aspect of experiments.

(1) The Aspect of Mechanism.

One would like to know what kind of mechanism there is in the organism which can carry the hereditary substance. It is generally known that the connecting link between two successive generations is the small microscopic fertilised egg. Since this egg develops into an individual resembling the parent, all the characters of the parent must in some manner be represented in the small fertilised egg. This fertilised egg divides repeatedly along predetermined lines and ultimately a new individual with a complex body is formed. It was thought that a clue to the hereditary resemblance could be gained if knowledge regarding the development of the egg into the adult be gained. Towards the end of 19th century a theory known as the 'cell-theory' which is a landmark in the history of biology was announced by Schleiden and Schwann. After a careful examination of tissues, they concluded that all living things, animals and plants, big and small, were built up of a varying number of small microscopic units called 'cells.' The cells are the living units which contain the living substance "protoplasm". There may be seen floating in the protoplasm of each cell a dark spherical body, *nucleus*. Protoplasm and nucleus form the two important elements of the cell and all activities characteristic of living things are associated with them. The cell has been defined as a nucleated mass of protoplasm. There are several small animals and plants like microbes whose body consists of a single cell. These take in food, grow, breathe and reproduce. Higher animals and plants consist of millions of cells which start alike at first but develop differently. If the fertilised egg be examined, it is seen to be a speck of nucleated mass of

protoplasm, and it is therefore to be regarded as a cell. The sperm and egg through the fusion of which the fertilised egg is produced, are themselves seen to be cells. Now the single cell of the fertilised egg divides and produces similar daughter cells. These divide again and thus a cell mass is produced from which the various parts are differentiated. When the process of cell-division was carefully studied, certain special features were observed which threw light on the mechanism of heredity. It will be useful to consider the process of cell-division. (See the plate). When the cell is inactive the nucleus is seen to be surrounded by a membrane and with the help of suitable staining reagents it is possible to see in the nucleus a fine network of threads in which granules are imbedded. These granules take in stains readily. When the cell begins to divide the thread-like network of the nucleus becomes more prominent, and appears as thicker and shorter. Then the network splits into a number of V-shaped rods. The rods are called "*chromosomes*". The nuclear membrane disappears and then each rod splits longitudinally into two similar halves which remain close to each other. Now a number of fine fibres, arranged in the form of a splindle, appears in the protoplasm of the cell. The chromosomes arrange themselves in the equator of the spindle. The fibres of the spindle begin to contract and the two halves of each chromosome are separated and carried to the two opposite poles of the spindle. Thus at each pole of the spindle is brought a group of equal number of chromosomes. These become aggregated and finally assume the form of a nucleus with a membrane. In the meantime, along the equator the fibres become thick and a partition is developed inside the original cell. Thus the original cell has divided into two similar cells. Certain characteristics of the cell division are noteworthy. It has been found that the nuclear network splits into a definite and even number of chromosomes. The number of chromosomes present in each kind or species of animal or plant is constant. The longitudinal splitting of each chromosome into two similar halves is regarded as a device to bring about an equal distribution of the chromatin between the daughter cells. All these points taken together justify the assumption that the nucleus is in some way connected with heredity and that the chromosomes are the actual bodies which act as the bearers of the hereditary substance.

This view of the chromosomes is still further strengthened by evidence from other sources. It was mentioned in the beginning that the fertilised egg, sperm and egg were all cells each containing protoplasm and nucleus. The sperm fuses with the egg and the product of fusion or fertilisation is the fertilised egg. Since the chromosomes of the sperm and of the egg are brought together during fertilisation, the number of chromosomes should be doubled in the fertilised egg. This fertilised egg will develop into a new individual and when fertilisation takes place in this generation there will again be a doubling of the chromosomes. Thus the doubling of the chromosomes may be expected to continue indefinitely owing to fertilisation. But observation shows that the number of chromosomes in the cells of the body is constant. The inference is clear that a reduction in the number of chromosomes must take place at a certain stage in the life cycle. As a matter of fact, the sperms and eggs are seen to possess only half the number of chromosomes

present in the cells of the body. Certain special changes take place in those mother cells intended to produce sperms and eggs, which result in the reduction of chromosomes to one half. The original number is only restored during fertilisation. This reduction of chromosomes is rightly regarded as an indication that the chromosome is somehow connected with heredity. Still more convincing is the evidence from breeding experiments of Prof. Morgan and others. Investigations on insects show the existence of two kinds of sperms while the egg is only of one kind. The eggs are all seen to possess "n" chromosomes but the sperms are of two kinds with "n" and "n-1" chromosomes. This difference in the number of chromosomes is connected with a difference in the sex of the individual. It is seen that the union of a sperm carrying "n" chromosomes with an egg results in the production of a female while the union of the sperm carrying "n-1" chromosomes with the egg results in a male. It is clear that the presence of an extra or accessory chromosome makes a great difference in the nature of the sex. Prof. Morgan is confident that he would be able to say which chromosome in his flies stands for a particular character. There is also evidence available which shows that along with the chromosome determining the sex of the individual may be associated other characters such as colour blindness. Biologists hold strongly that the chromosomes are the bearers of the hereditary substance.

(2) Mode of Transmission.

While biologists are willing to concede that the chromosomes form the mechanism of heredity, they differ in their views regarding the working of this mechanism or mode of transmission. Various hypotheses have been suggested. Long before the structure of the cell was known, Charles Darwin formulated the theory known as "the theory of pangenesis." Darwin assumed that the cells of the body sent minute particles or gemmules and that the gemmules were aggregated together in the germ cells like delegates in a parliament. It seemed to him natural therefore that the germ-cells should be able to produce an individual resembling the parent. It is difficult to prove the formation of gemmules.

The view which is accepted by a number of biologists is contained in "the theory of continuity of the germ-plasm" promulgated by August Weissman, the illustrious German biologist. Weissman examined the early stages of the development of the lower animals. It was found in certain animals, as in the case of the thread-worm of the horse, that the very first cleavage divided the fertilised egg into two cells, one cell dividing repeatedly to become the body and the other remaining inactive in the body and waiting to produce the germ-cells in proper time. Weissman concluded that at a very early stage in the division of the fertilised egg, a distinction into a body producing part and a germ producing part was noticeable. The germ producing part gets the specific germ material known as germ-plasm unaltered direct from the fertilised egg long before the body is differentiated. The germ cells are produced directly from this germ-plasm which is merely accommodated in the body. According to Weissman the body, far from producing germ-cells, is intended to be a mere vehicle for germ cells. It is a trustee entrusted with the task of protecting the germ-plasm. The germ-plasm therefore is a

continuous general stream extending over numerous generations, which receives fresh contributions from every act of fertilisation. Not only is the germ-plasm continuous but in a sense immortal. The idea of continuity of germ-plasm will explain why even features of remote ancestors can make their appearance. Inheritance is not strictly dual but multiple. "The son resembles the father not because he is a chip off the old block but because both are chips of the same block." Weissman thought it necessary to explain how even minute trivial features might be expected to be transmitted. He imagined that the chromosomes were composed of smaller bodies known as 'ids' each containing a complete inheritance. Each id was supposed to consist of still smaller bodies, determinants, which in their turn consisted of smallest units, biophors. Weissman considered these different bodies to have varying hereditary values and he assigned different roles to them. This idea of ids, etc. looks more like speculation. Physiologists have now demonstrated the significance of secretions from the internal glands. These secretions called 'hormones' are capable of influencing the growth of the body in a definite way. It is the view of some that the inheritance of certain features may be due to the action of hormones. Still others there are who think that heredity is a process of mere unconscious memory.

(3) The Aspect of Statistics.

It is to statistics that we have to turn if we should like to know the extent to which certain characters are transmitted in the race. Francis Galton made a patient and careful study of the pedigrees of a large number of families and his line of work continues to be carried on by Prof. Karl Pearson. We have to take note of two laws laid down by Galton on the basis of his studies. The first is the law of ancestral inheritance. This presumes that the inheritance of the individual taken as unity is made up of varying contributions from his ancestors, which form a geometrical series $1 = \frac{1}{2} +$ (parents) $\frac{1}{4}$ G.P. $+ \frac{1}{8}$ G.G.P. $+ \ldots\ldots$ to n terms. This has been slightly changed by Mr. Pearson. This law may serve to show that even remote ancestors can exert an influence to some extent, though not appreciably.

The second law is known as the law of filial regression. This law states that the individual always tends to approximate to the average of the race and it tells against the full hereditary transmission of exceptional gifts. Children of tall parents are not taller nor are the children of short parents shorter. "If this law of filial regression discourages extravagant hopes of a gifted parent that his children on the average will inherit all his powers, it not less discountenances extravagant fears that they will inherit all his weakness and disease." These laws cannot be regarded as biological laws. They cannot say what the heredity in individual cases will be. They deal with heredity on the average and they may help us to determine the progress or otherwise of the race.

(4) The Experimental Aspect.

Accurate knowledge of the problem of heredity can be gained only by means of experiments. Breeders and horticulturists have been crossing different forms and have even left on record valuable information about the forms produced by them. They are not interested in the problem of heredity for its own sake. Various crude

notions were prevalent with regard to heredity and the truth of these notions was never tested. One notion is what is known as *telegony*. It was believed that the influence of the first mating may persist in animals so that the offspring from a subsequent mating of the female with second male will tend to resemble the first male. Another common notion is that maternal impressions during pregnancy can influence the child. Further medical literature refers to a number of cases of transmission of diseases like syphilis, tuberculosis, etc., from parent to the children. Diseases which are known to be caused by microbes can never be transmitted from parents to children. In these cases there is no transmission but there is the likelihood of uterine infection. Infection may take place at the stage of the fertilised egg. Certain diseases are seen to appear more commonly in a family. This tendency is attributed to the fact that owing to some defect in the germ cells the members of the family show a predisposition to certain diseases. In such cases the predisposition is hereditary, and it would be possible to counteract this tendency by paying special attention to the environment.

The credit of carrying on experimental investigations on heredity for a number of years goes to Gregor Mendel, a contemporary of Charles Darwin. An Austrian monk of unostentatious disposition, Mendel found time in the midst of his work in the school to cross different varieties of the garden pea growing in his garden and to note the results. He proceeded cautiously and systematically and he felt that a real clue to heredity could be found by studying the inheritance of one character at a time. He took care to keep the individuals of each generation strictly apart and to note how many individuals showed the character in question. He always selected for his study two varieties, that happened to differ from each other in one or two sharply contrasting characters. The idea in selecting varieties that showed a pair of antagonistic characters was that the descendants could be easily sorted and that the study of the problem would be made simpler. Thus he crossed a tall variety of pea with a short variety of pea. A variety with smooth seeds was crossed with one having wrinkled seeds. He studied the history of several such pairs of contrasting characters. His method consisted in employing the pollen of one variety to fertilise the ovule of the other. The pollen of the tall form might be used to fertilise the ovule of the short form and vice-versa. The results were in no way different. When two varieties were crossed the resulting individuals were called hybrids and they form the first generation (usually represented as F-1). The hybrids happened to resemble one parent to the exclusion of the other. To find out whether the characteristic of the other parent was entirely lost, Mendel allowed the hybrid individuals of F-1 to inter-breed among themselves. To his surprise the individuals of second generation (F-2) were not all tall. Short forms also appeared showing that the characteristic of the other parent continued to be present in the hybrid though in a latent form. The tall and short individuals of F-2 when counted stood in the ratio 3 : 1 Before dealing with the inferences that can be drawn from these experiments, it will be useful to describe an interesting experiment with the four o'clock plant carried on afterwards by Correns. This plant (*mirabilis jalapa*) existed in two forms

one form having white flowers and the other form having red flowers. The red form was crossed with a white form. The hybrids in F-1 were all purple and they resembled neither parent. When the individuals of F-1 were allowed to interbreed among themselves there resulted the second generation (F-2). The individuals of F-2 appeared in 3 forms white, purple and red. The individuals in the three groups appeared in the ratio 1 : 2 : 1 respectively. An attempt was made to keep each of the three types separate so as to find out whether each of the three groups in F-2 could breed true. It was found that the white and red forms bred true, and produced only white and red forms respectively. But the purple form again began to split and to produce individuals of 3 types as before in the ratio of 1 : 2 : 1. The results may be illustrated in the following manner.

White (W W) × Red (R R)

Purple (W R) F_1 Hybrid

25 per cent. White W W 50 per cent. (W R) Hybrid 25 per cent. Red RR F_2.

25 per cent. W W 50 per cent (W R) 25 per cent. R R

All White W W Pure All Red R R Pure

In this scheme white and red forms are, to start with, pure forms and they can by themselves produce only white or red individuals. Such forms are regarded as pure forms and the pure forms get the same characteristic from both father and mother. That is why the white parent is indicated as W W and the red as R R. In the case of crossing there is no double dose of the same characteristic but there is only the coming together of two opposite characteristics. Hence the purple hybrid is indicated as W R since it gets its W from white and R from Red. The experiment with the pea carried on by Mendal may be illustrated in the same way.

Tall T T × Dwarf D D

Hybrid
Tall. T (D) F

25 per cent. Tall T T 50 per cent. T (D) Hybrid 25 per cent. Dwarf D D

All Pure Tall T T 25 per cent. T T 50 per cent. T (D) 25 per cent. D D All Pure Dwarf D D

The result of the experiment with the four o'clock plant differs from that with the pea only in the form of the hybrid. In both cases the hybrid is seen to split in F 2. The hybrid in the four o'clock plant is of quite a different colour and hence in F 2 we get the three types as 1 : 2 : 1. But in the case of the pea the hybrid happens to resemble only one parent and the character of the other parent is latent but not

suppressed. Seeing that 25 per cent. of dwarf forms are produced in F 2 there must arise a suspicion that the tall forms may not be all pure tall. The tall plants when allowed to interbreed did not all of them produce only tall forms. Only $\frac{1}{3}$ of the tall forms were seen to produce "pure tall" while the remaining two-thirds curiously enough began to split again into individuals of two types, tall and dwarf. Mendel got this kind of resemblance of the hybrid to one parent with regard to a number of characters. He therefore imagined that in the presence of one the other would be latent. Hence the form that asserts itself is called a dominant and the form whose feature is latent is called a recessive. The hybrid tall will be like the pure tall to all appearance and hence when the hybrid tall of F-1 splits it is seen to produce individuals of only two types in the ratio of 3 : 1, 2 T (D) going along with the pure tall 1 T T. The composition of the hybrid is indicated as T (D) to show that D is latent and T is dominant. Hence the two experiments show the same results. The splitting of the hybrid in the ratio of 1 : 2 : 1 is a constant feature and this is known as Mendel's law. A number of eminent biologists have been interesting themselves in the Mendelian experiment. Mendel's work remained unknown till his laws were independently discovered by Bateson, Correns and De Vries. They placed before the public the value of Mendel's experiments. "T. H. Morgan and his associates have bred and studied more than half a million fruit flies. In the study of a single character, the starch of maize, nearly 100,000 pedigreed seeds have been examined. W. E. Castle has bred not less than 45,000 rats." The Mendelian ratio given above for any one character is seen to hold good in almost all these cases.

It is now time to see what inferences can be drawn from the Mendelian experiments. The behaviour of the hybrid and the definiteness of the numerical ratio justify the following assumptions.

(1) The individual may from the genetic standpoint be considered as a bundle of characters.

(2) The expression of each character in the individual depends upon the presence in the germ cell of some special element known as its factor. Thus the tall form is seen to be tall because the germ cell has a factor (T) for tallness.

(3) The factors responsible for the expression of characters coexist in the hybrid and their proximity in the hybrid may have a varying effect on its form, etc., Thus the resulting hybrid may resemble one parent alone as in the case of the tall pea or may appear as a new form altogether as in the case of the purple four o'clock. In the pea the hybrid tall can be distinguished from pure tall only by the subsequent behaviour of splitting.

(4) The different factors happen to coexist in the hybrid and the extraction of pure paternal forms from the hybrid in F 2 shows that these factors should separate or segregate during the formation of the germ cells and attach themselves to germ cells in such a way that each germ cell can have one or the other of the two factors standing for the pair. Thus the germ cells of the hybrid tall can either have the factor for tallness or not have the same. The germ cells arrange

themselves as it were into two opposite equal camps, those with the one factor and those with the other factor. This idea of segregation of factors is the most important contribution of Mendel.

(5) The numerical ratio of 1 : 2 : 1 is not a mere fancy but is what we should get if the germ cells in the hybrid carrying the factors as stated above in (4) have equal chances of mating. Let us take the case of the tall pea and the dwarf pea. When the hybrid tall individuals begin to produce germ cells, pollen and ovule, the pollen may have the factor for tallness or not. It may be therefore T or D. The same is the case with the ovule. The combinations that are likely to occur will be represented thus.

OVULE.

		T	D
POLLEN	T	T T	T (D)
	D	T (D)	D D

1 T T : 2 T (D) : 1 D D

There are four kinds of combinations possible each type of pollen having a chance of mating with two types of ovules. In this set of combinations the double dose of tallness occurs only once and the double dose of dwarfness occurs only once. But a mixed dose representing the hybrid type occurs twice as often as the double dose of either parent. Since the hybrid talls are to all appearance tall owing to the dominance of that character the hybrids seem to split in F_2 into two types in the ratio 3 : 1. Since only one third of the three talls is pure tall in the case of the pea the ratio of splitting in the pea also is 1 : 2 : 1.

(6) A study of crossing two varieties which happen to differ in more than one character shows that the characters are each of them capable of independent transmission. Only the types of individuals will be larger in number and the numerical ratio will be different. Some tall peas of pure form produce smooth seeds while some of the dwarf form produce wrinkled seeds. Mendel crossed the two to find out whether the two pairs of antagonistic characters could be segregated and reunited. While experimenting with only one pair tallness appeared as dominant to dwarfness and smoothness as dominant to wrinkled nature. The tall smooth pea can be represented as T T S S and the dwarf wrinkled pea D D W W.

T T S S × D D W W

Hybrid F_1

T (D) S (W)

9 T S 3 T W 3 D S 1 D W F_2

Here we have two pairs of factors segregating and attaching themselves to the two kinds of germ cells of pollen and ovule. Each germ cell can have two factors but

the two opposite factors of the same pair cannot, as we have pointed out already, occur in the same germ cell. The composition of the pollen will therefore be of four kinds,

TS, TW, SD, DW.

The ovule also will be of four kinds, TS, TW, SD, DW. The combinations that are likely to occur among them may be represented thus :—

OVULE

	TS	TW	SD	DW
POLLEN TS	TSTS (TS)	TSTW (TS)	TSSD (TS)	TSDW (TS)
TW	TWTS (TS)	TWTW (TW)	TWSD (TS)	TWDW (TW)
SD	SDTS (TS)	SDTW (TS)	SDSD (DS)	SDDW (DS)
DW	DW TS (TS)	DW TW (TW)	DW SD (DS)	DW DW (DW)

While the genetic composition of individuals is as stated above, the actual appearance is determined by the fact that D is recessive in the presence of T and W in the presence of S. The actual appearance of each combination is indicated within brackets in each square. On counting we shall find that there are sixteen combinations in the ratio 9 TS : 3 TW : 3 DS : 1 DW.

(7) What is true of one or two characters has been found to be equally true of a large number of characters such as we meet with in animals and plants. Heredity in the light of Mendel's experiments amounts to a process of shuffling and the factors standing for characters are free to segregate and reunite so as to produce a number of combinations. It is this principle that is taken advantage of by breeders and horticulturists who are now able to weed out undesirable factors and produce an individual with a combination of desirable factors. New forms of plants and animals are now made to order. A combination in one type of a crop plant like wheat or paddy, of resistance to disease and drought, richness of reserve material, etc., has been attempted with success.

Mendel's experiments emphasise still more clearly the unique position of germ cells in respect of heredity. What is in the germ cell can alone be transmitted. In the light of experiments carried on at the present day a modification of the views of

Mendel has been rendered necessary. Now it is known that a factor can in certain forms influence a number of characters. Also a number of factors may be concerned in the expression of a particular character. In certain experiments some factors show a tendency to go together. There are cases where in the presence of one factor the factor for a different character of another pair can have no effect. Thus various factors like 'intensifying factors' and 'inhibiting factors' are recognised. The factors for colour blindness, hæmophilia, etc., are linked with the factor for sex. It is still an open question whether the sex of the individual is also a Mendelian character. Mendelian experiments can offer a rational explanation of "reversion" where an individual resembles a remote ancestor in most respects. If the combination of germ cells which produced the ancestor should occur again, we should have reversion.

Mendel's experiments have placed definite ideas before the Eugenists. They had to rely on statistics with regard to inheritance of characters in human society. About a hundred characters in man are now supposed to behave in a Mendelian fashion. But these characters are usually of a pathological or abnormal nature such as colour blindness, abnormalities of fingers, feeble mindedness. The work of the Eugenists is now directed not only towards creating an environment which will inhibit the expression of undesirable hereditary tendencies but also towards improving the racial quality by restricting the reproduction of the undesirable and by encouraging the marriage of the desirable. Birth control is one of the important items in the programme of work of the Eugenist. Mendel's experiments are influencing the activities of the Eugenists not a little. The work of Mendel should be regarded as epoch making. If his results were known to the public in his time, Darwin's theory of organic evolution would have had to face keen opposition. Whether Mendelism should necessarily involve the overthrowing of Darwinism is a question for special consideration.

Editorial Notes.

The Budget of the Government of Madras in so far as it affects education is reviewed in an article by Dr. Meston to which we invite the special attention of our readers. This is the third consecutive year in which Dr. Meston has favoured us with his illuminating reviews and penetrating criticisms. The present article puts before us the plans of the Department of Education for 1925-26, dealing with University Education, Secondary Education and Elementary Education. The most hopeful indication is in regard to Government's policy for elementary education from the direct control of which it is gradually withdrawing. But the facts in regard to University and Secondary Education are disheartening. The larger percentage of the work being done is, in both instances, under the control and support of non-government agencies, whereas that fact is not at all reflected in the Budget. Government has repeatedly declared that its policy is that of encouraging the private agency, but the encouragement must go beyond the stage of rhetoric if it is to be effectual. Verbal assurances are all very well in their place, but unless effect is given to them in the Budget, they do not give any practical assistance to managements. What is the remedy for the existing anomalous situation ? Dr. Meston makes a very good suggestion in proposing that the Director of Public Instruction be made a Secretary to Government, a position which would enable him to be more than a mere ' voice ' in educational policies. He also suggests that the Government's policy regarding grants-in-aid be again enunciated and adhered to. This is where the shoe pinches. What is the real value of a policy on paper which Government may ignore in practice ? Government may answer that it cannot distribute funds which it does not possess. But what becomes of the funds at its disposal ? In the first instance, the schools managed by Government are a great drain on its exchequer, and cost the tax-payer very much more than the aided institution. And in the second place, Government is bound by statutory regulations to meet Taluk Boards with rupee for rupee which they raise as educational cess. Why should the grants to aided institutions not be placed on the same statutory basis ? If the proportion needs revision, let that be done, but it would be a great boon to managers if they were on such a basis that they could calculate the amount of help which might be reasonably expected. Government has repeatedly assured us of its profound appreciation of the contribution of aided education to this Presidency. We would like to see that appreciation interpreted in fiscal terms.

The recent trial of Mr. J. T. Scopes, a science teacher in a Tennessee High School for having taught the doctrine of evolution in defiance of the State law has attracted world-wide attention. The charge to the jury by the judge was begun by reading the account of the creation in the book of Genesis, in doing which he pointed out that the teaching of any other doctrine was in the face

of the law. The immediate question is as to whether or not a State has the right to prohibit the teaching of any philosophical or scientific principle. If each State in the Union is granted that right and it be not a federal matter, it would seem that a good deal of confusion may result. The defenders of the law say, if California can pass legislation forbidding the reading of the Bible in schools, surely Tennessee can forbid the teaching of evolution.

But there is a profounder question that is stirring the minds of people more than that of the validity of a law. It is the centuries' old problem of the relation between religion and science. In the action of the legislature of Tennessee we see a definite attitude of hostility assumed towards science in the name of religion. The framers and defenders of the law obviously regard the Genesis account as scientifically accurate, and capable of literal interpretation. They further look with serious apprehension on the evolutionary hypothesis as one which rules God out of the world. They have made much out of the word 'hypothesis', sometimes equating it with the phrase 'mere guess', and claiming that this particular guess leads straight towards materialism. Meanwhile the Council of the American Association for the Advancement of Science reaffirms that, so far as scientific evidence is concerned, "no scientific generalization is more strongly supported by thoroughly tested evidence." The scientist admits that evolution is a hypothesis, but the policy that calls a thoroughly tested hypothesis a 'mere guess' is surely short sighted. Moreover it must not be forgotten that the idea of creation is also a hypothesis. It is not a case of fact versus guess, but of an ancient Hebrew religious hypothesis versus a modern scientific hypothesis. We do not believe that it is necessary to conclude as the people of Tennessee that the two positions are fundamentally irreconcilable. The cosmologies of Genesis and of the Brahmanas were really the outcome of religious faith, faith that expressed itself in these primitive forms of the cosmological argument. If we substitute the conception of development for that of a series of disconnected acts, if we substitute, as John Fiske put it, the simile of the flower for that of the watch, we have not thereby ruled God out of his world. We can believe in God as creatively active in the on-going process. The universe in which we live and God lives is a living organism, not a lifeless mechanism. The scientist may still hold to his religious faith, despite the numerous cries that he cannot believe in God if he holds to evolution.

THE DEATH OF MRS. JOHN SCUDDER on August 30th at Vellore removes from the American Arcot Mission its veteran missionary, one who had spent sixty-four years of service in India. We are reminded of the great services to India of that celebrated family. Dr. John Scudder, who came to India in 1819 was the first. Since that time twenty-five of his children and grand-children have been missionaries, and to-day four members of the fourth generation are in the Arcot Mission. The Magazine extends its sympathy to the family and friends of the late Mrs. Scurded.

What Men Think

Religion and Healing

This is the title of a thoughtful and, as it seems to us, on the whole a very clear-sighted article by Dr A. T. Cadoux in the August issue of the *Expository Times*. 'Facts show', he says, 'that religion can be used effectively to strengthen suggestions for the removal of specific bodily evils. Do these facts indicate that such cures ought to be sought as part of the work of the Church?'

However attractive such a suggestion may seem, Dr. Cadoux finds several considerations to give us pause In the first place, the desire to employ religious suggestion for curative purposes often leads to a dangerous postponement of the use of medical skill. Moreover only scientific training can qualify a man to judge in what kinds of cases suggestion is likely to be successful, or can guard him against the mistake which, instead of directing suggestion against the real disease, uses it to remove painful symptoms which may be connected with nature's own curative processes. Again, what of the consequences when suggestion fails? If the failure is not to be a shock to the patient's faith in God's love or God's power, must nott he blame be laid on the imperfection of his own faith? And if, by this distressing failure to win healing by faith, he is persuaded that he has not faith enough to redeem his body from sickness, can he still be sure that he has the faith to receive the redemption of his soul?

There are further dangers, however, of a subtler kind. 'In any use of suggestion, to contemplate the possibility of failure is to invite it. Hence comes the temptation to shape one's thinking so as to give suggestion its maximum force. The interests of bodily comfort and health are thus made to bias our belief and tamper with our honesty of thought.' For example, we are tempted to convert the truth that human ill-health and pain are unwelcome to God, and that He is our Ally in the struggle against them, into the exaggeration that He never wills that man should suffer. Or we may be led to go still further, and to adopt, in the teeth of the facts, the Christian Scientist's denial of the reality of pain. Even in the case of a non-religious use of suggestion like M. Coué's, many readers of the description of his method 'feel that it is an attempt to impose upon the subconscious the declaration that a certain thing is true, not because we believe it, but because we desire that it may become true'.

In addition to the spiritual dangers that follow upon failures in the religious use of suggestion, there are dangers consequent upon successes. The patient who has been cured through faith is in danger either of thinking himself God's favourite, or of priding himself upon a superior measure of faith, or at least of finding himself, in a spiritually hurtful degree, an object of religious interest to the other members of his circle. Moreover, in all religious cults which profess the elimination of disease and pain, there is a tendency for spiritual interests to be swamped by the interests of bodily health.

Healing in the New Testament

Dr. Cadoux turns next to consider the place that healing played in the ministry of Jesus, 'since it is to Him that appeal is made by those who bid the Church resume this function'. Examination of the Marcan record leads him to the view that, apart from the casting out of demons, cures wrought by Jesus were rare and exceptional after the earliest days of His ministry. 'Disease and demoniac possession are regarded in the Gospels as two quite distinct things (e. g. Mark iii. 10-12). A deaf man is a different sort of case from one with a deaf demon, and is differently treated (Mark vii. 33*f*., ix. 25).' Dr. Cadoux finds it evident that in Jesus' way of regarding devil-possession, the dominant element was the idea not of mental defect but of moral and spiritual slavery. The demoniac was 'one whose sin had allowed the entry of a Power which his will was powerless to evict. It was the complete tyranny of evil in men who were not completely evil.' Hence their plight had a different appeal from that of the merely diseased or physically defective. 'The blind or lame might have the kingship of God in their hearts: the demoniac could not.' So, when Jesus found that the exercise of His power to heal was incompatible with His work as a proclaimer of truth, He 'refrained from all healings and confined Himself to the casting out of demons, in which He brought the sufferer not wholeness of body but peace of mind and the possibility of enjoying the presence of God.'

What about the practice of the early Church? 'The nature of the narratives in Acts suggests that such healings were extraordinary and rare.' In speaking of the gifts of the Spirit, Paul three times distinguishes 'healings' from 'miracles', and he ranks 'healings' with 'helps and governments' on a rather mundane level. All this 'suggests that the care of the sick by the then known means was a branch of the Church's regular activity and that cures by religious suggestion, i. e. "miracles", and the casting out of demons were regarded as quite a distinct activity to be exercised by those who were specially gifted.'

Religion and Miracle

Dr. Cadoux's conclusion is that 'the direct application of religious suggestion to specific maladies is possible and often effective, but that it is a dangerous practice for those whose supreme duty lies in witnessing to the truth and proclaiming the gospel', and that the legitimate influence of religion on health is to be found 'in the effect of a quiet, cheerful, courageous, joyful mind upon those bodily functions that make for health and healing.' With his conclusion, as thus worded, most of his readers will probably feel it difficult to disagree. But there is one respect in which we think that Dr. Cadoux fails to do justice to the religious movement which he has been criticizing. He appears to suppose that the main appeal of doctrines of healing by faith has been to a non-religious side of human nature—the interest in health and physical well-being. We believe, on the contary, that these doctrines have exercised an important spiritual appeal through their capacity of restoring to men a belief in the practical reality of God. The belief that healing is available through the prayer of faith has had this effect through the

idea that such cures were supernatural and not merely the result of religious suggestion. And while religion may possibly gain rather than lose through not allying itself with any confident dogma that healing is always available through the act of faith, it cannot but suffer serious loss if it surrenders faith in the availableness to man, through the prayer of trust, of resources of Divine help that transcend or even run counter to our present understanding of the order of nature. Dr. Cadoux's otherwise so instructive paper seems to us to have its value seriously lessened by the fact that, while he himself clearly does not regard faith-healing as miraculous, he appears to suppose that a decision not to regard practice of curative religious suggestion as a part of the normal work of the Christian ministry is equivalent to a surrender of the claim that the right of miracle-working, that is, of invoking by faith, upon fit occasion, the supernatural resources of God, is a permanent note of the Church's life.

Theism in Religion.

In the July number of *The Journal of Religion* Professor Gerald Birney Smith deals with the question, " Is Theism Essential to Religion ? " For the great majority of religious people such a question could never arise. For them religion is the belief in and worship of God. Theodore Parker once said, " I call him a theist who believes in any God." That religion could exist without theism is therefore unthinkable to the ordinary man. But Dr. Smith is not dealing with the ordinary man, so much as the scientifically and philosophically minded. As we read his article, we are persuaded that the problem is one demanding careful attention and thought. The theistic hypothesis as opposed to the deistic is not a mere assertion of belief in the existence of God, but of a God who created and rules the universe. Flint's definition was " the doctrine that nature has a Creator and Preserver, the nations a Governor, men a Heavenly Father and Judge." So theistic philosophy involves a tripartate reference, " a theological explanation of the physical universe . . . a theological theory of political authority, and . . . a theological interpretation of religious and moral experience." There can be no doubt of the possibility of working out a coherent philosophy of the universe on this view which will satisfy a certain type of mind.

Dr. Smith goes on to show that the theistic philosophy is loosening its grip on the mind of to-day because of a dissolution of the older views concerning the physical universe, politics, and the personal life. The first of these to break down was the theistic view of politics, and to-day that department has become thoroughly secularized. The second attack was on the theistic philosophy of nature, and was the outcome of the increasing application of the scientific method to all departments of human life. Natural processes are explained in terms of themselves rather than by reference to God. Thirdly, the scientific method in sociological and psychological sciences has been invading even the realm of moral and religious experience itself, and some writers have been contending that it can all be explained by natural and social references. What is the cenclusion which we must reach in view of these tensions ? What shall we do with theism ? There are three possible answers. One is to hold to it in spite of the movements that threaten it,

the attitude which characterizes American fundamentalism to-day. A second alternative is to discard it as a worn-out and unnecessary hypothesis. A third is to revise it in the light of our expanding knowledge of the universe.

The writer discusses the second alternative as it has been presented in a recent book by Professor M. C. Otto on *Things and Ideals.* This writer believes that theism encourages one to a dream of consolation rather than a fearless facing of the facts. We may do well to admit that a good many facts of experience are decidedly unpleasant But what is to be done about them ? Resignation to the will of God will never make us better, though it may give us a spiritual opiate. The imperative duty is to enlist human intelligence in the problems of social reconstruction. Professor Smith well answers Otto that it is not a fair presentation to assume that a theistic philosophy of life has not been and is not interested in moral and social reconstruction. The truth is that in the religious consciousness have been born many ideas of philanthropy, social betterment and moral regeneration.

The position with which Dr. Smith allies himself is that of a revision of the theistic view of the universe and of life. It is that interpretation which enables man to find a guarantee for cosmic support for his ideals and values. Since the religious attitude is an attitude of socialization towards the extra-human environment, some sort of an ' other ' to the social relationship is necessary. Religious experience must have cosmic significance or it has none. Theism endeavours to make this experience a source of strength, confidence and joy, setting man free to engage in all the nobler human enterprises.

A new Complexity of Matter.

Recent studies of matter have shown that it is both more simple and more complex than was formerly thought. The vast amount of work in the fields of radioactivity and spectroscopy have shown that instead of the material universe being built up of 92 or so kinds of particles, there exist only two fundamental physical units—the electron and the proton. On the other hand, work on positive rays has shown that most of the elements are mixtures of several kinds of chemically-indistinguishable molecular species, and studies in allotropy and of the effect of the intensive drying of substances have brought to light facts that lead to the astonishing conclusion that most if not all chemically pure substances are really equilibrium mixtures. The work leading to this latter conclusion is of recent date and is not yet much known except to specialists and so it may be of interest to give an outline of it.

A well-known criterion of the purity of a substance is a definite sharply-defined melting point. It has long been known that the melting points of sulphur and some other substances are affected by previous and recent heating, and that considerably different values are given by different workers for the melting points of the same substance, red phosphorus for example, the differences not appearing to be due to experimental error. The Dutch chemists Smits and Cohn and their students have made a special study of this subject and have shown that the melting points and other

physical properties of many most carefully purified metallic and non-metallic elements and of organic and inorganic compounds of the most diverse kinds are changed temporraily by heating, compression and other physical treatment. This behaviour can be easily accounted for by supposing that the substances are mixtures of two or more mutually interconvertible constituents in equilibrium. A change of physical conditions will change the position of equilibrium from that existing normally to that which is stable under the new conditions. If the physical constants are determined before the normal condition of equilibrium has had time to become re-established, and this may take a long time, it will be found that the properties are different from those normally found as the substance is a different mixture. This hypothesis, that all substances are equilibrium mixtures, has been put forward by Smits to explain these facts. The theory has received support by successful attempts at separation. If red phosphorus be a mixture of two substances, it is to be expected that one will be more volatile than the other; by heating to a temperature not exceeding the range of stability of the red modification and continuously pumping away the vapour, it is to be expected that more of the more volatile constituent than of the other will be removed and that the vapour pressure of the remaining red phosphorus will be abnormally low until equilibrium has become established again. Experiment shows this actually to be the case.

Further evidence in favour of Smits' hypothesis has come from a somewhat unexpected source. During the early years of this century, Prof. H. B. Baker published accounts of his work on the intensive drying of substances. These results led to the remarkable conclusion that absolutely dry substances will not react with one another. Colourless phosphorus, for example, which under ordinary conditions combines with great vigour with oxygen when very slightly warmed, if freed from every trace of moisture may be heated so strongly in oxygen that it vaporises but no combination ensues. As an extension of this work, Baker has found that pure substances after being freed from the last minute trace of water that they always contain, have quite different physical constants. Ether, for example, which ordinarily boils at 35°C., after intensive drying, boiled at 83°C., while the boiling points of mercury and alcohol were raised by 62° and 60°C. respectively. This phenomenon was observed with all the substances used, which included metals, non-metals, ether and various alcohols and hydrocarbons. In some experiments, the process of drying was continued for 20 years. A very important point noted about these dry liquids was that the temperature of the vapour they gave off on boiling was not far from that of the ordinary boiling point. The temperature of the vapour of a pure substance when boiling is always that of the liquid phase. These results therefore appear to indicate the mixed nature of what were formerly regarded as pure substances and support Smits' hypothesis. It is supposed that in the absence of traces of water, readjustment of the equilibrium cannot take place when conditions are changed, just as under the same circumstances other chemical reactions are inhibited; the two or more phases thus become independent of one another and the substance behaves as other mixtures do. From these various results, it appears that all of what are usually regarded as pure substances, are equilibrium mixtures, and that a really pure substance,

should such be able to exist, will be metastable, a slight trace of moisture being sufficient to cause it to pass into an equilibrium mixture. The exact difference between the constituents of these mixtures, whether they can be completely separated and other such points have not yet been ascertained. It has been found that the process of drying can be accelerated somewhat although it thereby becomes very laborious, and that the momentary opening of the sealed glass vessel containing the substance will admit sufficient moisture to make the substance behave normally. Some time is therefore likely to pass before the subject will have been sufficiently explored to justify the universal application of Smits' hypothesis.

The Railway Centenary.

The celebration of the Railway Centenary at Darlington and Stockton has aroused world-wide interest in the event not merely because the year 1825 marks the period of revolution in land transport, but it opened an era of unparalleled scientific progress and activity in the history of the world. It is almost a truism to say that the Victorian age, if it lives in history as a distinct epoch, will do so because of its science rather than its politics. The celebration of the centenary is a timely reminder to this generation of that rich heritage bequeathed by the distinguished galaxy of scientists who laboured and suffered for the happiness of mankind. In the annals of railway development the name of George Stephenson will ever be remembered as the builder of 'Locomotion No. 1' which was the pioneer of a net work of railways which has radiated from Stockton and Darlington to the uttermost parts of the earth. Steam had been applied to river and sea transport long before 'Locomotion No. 1' was built and the first steamship had crossed the Atlantic as early as 1819. Steam carriages had been built in Europe in the 18th Century and by 1820 railways worked by horses were also becoming common in England. The chief contribution of Stephenson consisted in combining the steam engine and the railway for purposes of general traffic with the remarkable result that 'an intercourse and trade seemed to grow out of nothing.' Scientific research followed, investigating and improving the locomotive, and we now possess mammoth engines of vastly superior type which serve trans-continental lines all the world over. We are so far closely identified with the scientific discoveries and inventions which chiefly the Victorian age set in motion that it will be hazardous for any man or woman to forecast their ultimate effects on society and mankind, while the future of railway transport is complicated by the comparatively recent invention of the internal combustion engine and the marvellous strides in civil aviation.

While these remain as portents it will not be altogether out of place to review in brief the progress of railways in India which date back to 1845 when 192 miles were opened experimentally at Calcutta, Bombay and Madras to test how the new invention will suit eastern conditions. The history of Indian Railways is a chequered story. No serious attempt was made to extend the lines till Lord Dalhousie impressed upon the Directors of the East India Company the political and commercial importance of a comprehensive building programme. Meanwhile the great Indian Mutiny broke out and the mutineers exploited the

new invention to spread disaffection. But the mutiny emphasised the urgency of a proper system of communications for the efficient administration of this empire and an immediate contract was entered into for the construction of 5,000 miles of railways which would link together the headquarters of the presidencies, the chief ports, inland regions, and strategic points in the Punjab and the frontier districts. For many years the working of the railways was very disappointing and the cost of railway administration was a heavy drain on the Indian exchequer. Government nevertheless persevered, and in 1900 the railways for the first time returned a small gain which has been rising rapidly ever since. The Indian Government now possess a magnificent asset in their railway property which comprises a total mileage of 38,000 miles. But it has been a matter for bitter complaint that the total mileage is utterly inadequate for the growing needs of passenger traffic and the rapidly developing resources of the country. In spite of shortage of rolling stock and shortage of engine power the railway companies have been carrying on, trusting to muddle through the heavy seasons of the year. The Indian trade is severely handicapped for lack of railway facilities and schemes of railway extension are in turn blocked for lack of finance.

Happily the question is no longer as in the days of the mutiny whether religion will be endangered by the expansion of the railways, but how to procure the wherewithal, the enormous sums of money required for fresh railway projects. Whatever funds the government may be able to allocate are easily absorbed in providing rolling stock for the clamorous trades, and London is obviously the only money market where the Indian Government can float loans on favourable terms for an adequate building programme. But the inclination of the Indian Government to order railway materials in the cheapest market is strongly disapproved by British commercial interests and the British investor is not anxious to support loans which will be fatal to his own industries. The reconciliation of economy with inter-imperial preference offers a perplexing problem and the suggested solutions are not of much immediate practical worth. In the meantime railways are badly congested and the development of the country's resources are partially paralyzed. The cry has been loudest from Madras. The surprising fact remains that during the 20 years the Railway Board controlled the administration of Indian Railways the average annual construction for which the Railway Board was directly responsible was only 14 miles ! The future outlook, however, is hopeful and there is evidence that the railway deficiency of 'benighted' Madras is now recognised by Simla and some atonement is likely to be made for past neglect. On the recommendation of the Acworth Committee railway finance has been separated from the general Indian Budget and the Railway Board has been reconstructed. The new Board has a programme of 150 crores of capital expenditure and is energetically pushing forward the measures of rehabilitation outlined by the Acworth Committee ; but it will be many years before Indian Railways will be able to meet cheerfully the heavy demands of passenger traffic and of the trades. Even so, remembering how much of our present prosperity we owe to the existing, if unsatisfactory, facilities of transport, our thoughts gratefully

turn to the great benefactor who by a happy stroke of genius put the steam engine on the railways September 27, 1825.

The Spiritual Conception of Democracy.

In the last chapter, entitled "Prophetic", of his recent book "The Challenge of Asia" Mr. Stanley Rice suggests a far-reaching difference between East and West. In the West owing to the influence of Christianity the doctrine of individuality has taken firm root. All Christians are sons and daughters of one Father, before whom all are of equal value. It is no longer on the nation or the family that the emphasis is laid, but upon the individual soul in relation to the divine helper. In the East the emphasis was upon an impersonal omnipotence into which finally were absorbed the souls of men, when purged of all their impurities. The eastern ideal therefore was to escape from the prison-house of personality and lose oneself in the divine as a river merges with the sea Along with this religious ideal went the social arrangement of the joint family system. This system, our author states, is fatal to the national idea. "So long as the family is preferred before the nation there can be no true patriotism. In the West the unit is the individual. The son, emancipated from the parental control, begins a new and separate life. He is under no obligation except that of filial affection to support father or mother, brother or sister. But he has substituted the state as the claimant upon him; he goes cheerfully to fight for 'king and country', knowing that his death may bring sorrow upon his parents, and yet not grieving because he also knows that to remain behind would cause the greater sorrow."

"In the East it would appear that the remoteness of the Government and its widely extended authority have subordinated the national to the family tie." And perhaps in India the greatest obstacle to nationality will be "the patriarchal conception which, having grown with the growth of centuries, has so become a part of the people's lives that to eradicate it is like tearing up a tree by the roots."

"But the foundations of democracy rest upon individuality. The whole conception depends upon the personal relations to the state of the unit working in co-operation with his fellow-units. It is the counterpart of the cricket field where each man is an integral part of the game but agrees to work under a chosen leader who is not an autocrat but *primus inter pares*." . . . "While the cricketer is an individual unit, the worker is the subordinate and powerless member of a family."

"The virtue of all others which has impressed itself upon the oriental mind is the virtue of filial piety," as we see in the life of Yudishtra, in the polyandry of the Pandavas, and in the story of Rama. "The key note of Asiatic ethics may be said to be reverence, which in the shape of ancestor-worship finds its expression not only in relation to the living but to the dead also." . . . "Reverence implies a relationship of domination and servitude between the worshipper and the worshipped." . . . "The reverence, which has induced the object and uncomplaining submission among the Panchamas, is born of obedience through the centuries to those who in early times were constituted their masters and their betters." . . .

"And conversely the submission of the worshipper breeds arrogance in the worshipped." "The key note of Western ethics is truth. . . . The whole fabric

of society rests upon confidence." "The ideal of reverence is compatible only with the monarchical system. The submission to which for centuries the principal nations of Asia have been accustomed is not that submission which obeys the laws fashioned and the orders issued by those to whom it has delegated power and who therefore retain that power on sufferance. It is the submission of the servant to the master, a submission under which the servant takes no responsibility and desires to take none."

"Now it is evident that politically speaking, the ideal of truth is specially applicable to democratic Government. . . . The moment that democratic institutions are introduced the authorities hold their power in trust, and they succeed or fail according to the measure in which they respect that trust."

"The Indian aspirations are divided into two classes. The first is the replacement of British officers by Indians . . . and the second is the replacement of an oligarchy by a democracy, that is to say, it is claimed that the country must be people-governed. To the first of these claims it is argued that the new rulers have never had experience of responsibility, but the fear is not so much that they will make mistakes, for all Governments do that, but that the ideal of reverence, reacting on the rulers, will generate an arrogance and an oppression which England could not stand by and contemplate with equanimity. That is why it is often said, and never more convincingly than in 'Al Carthill's' *Lost Dominion*, "that the subtle Brahmin is working for the removal of the British that he may again establish his own complete ascendancy. In like manner it is the conviction that the ideal of truth in the larger sense is not sufficiently regarded which induces the doubt whether India is really in earnest in asking for a democracy; and secondly whether if she obtained the machinery for it she would breathe the true democratic spirit into it."

"Asia, especially China and India, make the mistake of looking upon democracy as a mechanical system instead of a spiritual conception. They have not yet recognised that in order to profit by the political wisdom of Europe there must be a change of ideal. . . . Such a change of ideal must come very slowly; and it can only come by sacrifice, a sacrifice comparable to that of many a man who in his adult years rejects at the bidding of reason the intuitive religion of his childhood. Every observer has borne witness to the immense superiority of Asia over Europe in reverence; every observer has noticed the decline of that quality in Europe since power was extended to the people. The sacrifice may not be worth while; if the ideal of power is worth striving for, if in the long run it is to transcend all other ideas, the sacrifice will have to be made. Efficiently trained armies you may have, and efficient navies; a well-organised commerce too may come, but if the Government of the country is unstable and inefficient all the rest will be of no avail. You cannot put the new wine of democracy into the old bottles of the traditional ideas without risking a catastrophe. Is Asia capable of the sacrifice? and will she think it worth while?"

The ideal of power and the ideal of reverence! How far is this a correct account of the difference? Recently in India under the leadership of Mr. Gandhi we have had a determined movement against the ideal of power. Time will tell

whether educated India has followed him or not. But criticism of this ideal is not confined to India. In Tawnay's "Sickness of an Acquisitive Society" we have a profound study of the malady which afflicts the industrialised west, where the acquisitive spirit has crushed out so many of the finer sympathies. How are we to prevent the exploitation of men women and children, which has no frequently accompanied the ideal of power, unless it is by restoring the lost ideal of reverence; not perhaps in its old form but in a truer and finer form? Christianity profoundly increased the value of the individual soul, but if we are to achieve a healthier and more wholesome social life, the Christian emphasis on the truth that we all are bound together in the bundle of life, and if one is exploited, we all lose something, has to be made far more potent in our dealings one with another. The emphasis which Jesus placed on men as far more important than institutions or wealth has to become the very keynote of our life.

In still another way Christianity has a political contribution to make. The prophets of Democracy have stressed the doctrine of equality, and we may rejoice wherever this has destroyed the false reverence of snobbery, and has given us the reverence for man as man. The spirit which says "we shall respect you only as you prove yourself worthy of respect."

But too often the doctrine of equality has been applied where it is not true. Men have grown to hate and deny all that is higher and finer than themselves, and you have as a result the cult of incompetence, and the uncharitable belittling spirit, which would pull us all down to a common level of mediocrity. Here again we need the balance of Christianity. "Ye have not chosen me; I have chosen you." Jesus stresses obedience and discipleship, as few have stressed these roads to freedom. And to-day when the finest leadership was never more necessary, we would do well to remember that the best democracy is that community which knows how to create and how to trust great men. The glorious days at Athens were under Pericles the aristocrat, who dared to tell the people the truth, and not under Cleon the demagogue, who told them the thing well-pleasing. Here again is it not reverence we require? That reverence which will gladly give honour where honour is due. A recent writer in reviewing Bryce's "Modern Democracies" said "If Democracy is to preserve itself, and win the world, it must be gracious: it must be charming and agreeable, persuasive and reasonable. The only alternatives before the peoples are to learn to live in quietness and confidence, in the practice of social and political charity, patience and reasonableness—or to sink back into slavery once more." As we read our thoughts fly back to the Funeral speech of Pericles, with its emphasis on equal justice, the claim of excellence, the absence of exclusiveness and of the churlish spirit, the spirit of reverence and respect for authority.

It was these qualities which made Athens admirable. Grace, charm, the persuasion of reasonableness, what are these but the fragrant flowers of the tree of reverence in human life? God planted that tree in the garden He made, but He demands that we shall tend and nourish it. Men shall recover the lost grace of reverence as they yield themselves to the influence of Him who was born where East and West meet, in Bethlehem of Judaea.

Book Reviews

The Sources of Islam—By the Rev. John C. Blair, B.A. Madras: Christian Literature Society, 1925. Pp. 189.

The question of origin is one which besets the student of the History of Religions much to-day. In the past men have been frequently contented with the explanation of sources by reference to the concept of revelation. That is on the face of it a religious explanation, and gives no information as to the manner in which revelation takes places. Furthermore it tends to neglect the fact that sacred scriptures have an origin which can be traced in a human historical process. The little volume before us is of value as a critical study of the sources of the faith and practices of the Muslim world. It takes account of the Arabian environment into which the prophet came, and of other influences which worked upon the religion as it developed. The book is well written, attractively printed, and should meet a real need for students of Islam.

Buddhist Stories—Translated from the Pali by F. L. Woodward, M.A. Adyar: Theosophical Publishing House, 1925. Pp. 140. Re. 1.

The author of these translations is well-known for his work in connection with the Pali Text Society which has been doing much to bring within reach of English readers translations of Buddhist scriptures. The present volume is a collection of short stories from various sources. As the author says, many of the Buddhist stories are very involved, like the Panchatantra, tale being woven within tale. He has wisely selected a few representative tales which are among the better short stories, and give the reader a fair conception of the ethical notions in the minds of ancient Buddhists.

Swami Dayanand—Printed and published by Shriman Amar Singh at the Jiwan Press, Lahore, 1925. Pp. 234. Re. 1.

This poorly printed volume calls itself "a true and critical biography of the founder of the Arya Samaj." It is issued under the direction of the Dev Samaj, and is obviously an attack on the Arya Samaj's interpretation of the character of the Swami. The main charge laid against him is that of hypocrisy, and a good deal of evidence is adduced to substantiate the charge. The value of polemics of this kind is very doubtful.

Katha Upaniṣad—Introduction, text translation, and notes. By R. L. Pelly. Calcutta: Association Press, 1924. Pp. 73.

The purpose of this little volume is explained by the author as that of furnishing a translation and notes of this Upaniṣad for the use of B. D. students of Serampore University, that they may relate the teaching of the book to Christianity. The

translation follows in the main that of Dr. Hume, and endeavours to place in the hands of students at little price the results of work which would otherwise be expensive for them. It ought to fulfil the purpose of the author very well.

The Religions of India—By A. L. Saunders, C.S.I., I.C.S. London: Watts & Co., 1925. Pp. 48.

This little brochure is the text of a lecture delivered by Mr. Saunders before the Victoria League. It is rather the result of long residence and close observation than of keen scholarship. It is too much to expect that it would be any material contribution to the subject. Nevertheless the treatment is sympathetic and full of information.

Author and Printer—By W. H. Warren. Madras: Christian Literature Society, 1925. Pp. 120. Cloth, Rs. 2.

Any person who has anything to do with printing and publishing must realize that there are a great many things to learn which do not appear to the casual observer. The people who would fain be contributors to newspapers and magazines include a great many who have not the faintest idea of how to prepare a manuscript for the press, and people who ask to see the proof of what they have written often show little aptitude for correcting it. Mr. Warren has done a real service in bringing together just the sort of information that is required by those who would be intelligent as authors and editors. It is natural that in a country where so much of the type-setting is done by men who have not the foggiest notion of the meaning of what they are setting, there should be much to try both author and printer. The only remedy for this ill is a process of education, and the education is needed on both sides. This welcome volume will go a long way towards furthering that educational process, and it ought to be kept at hand as a constant book of reference by those engaged in writing and reading proofs. The book is well illustrated, and a very good specimen of the book-maker's art.

Highways of the Spirit—Vol. I. Daily Readings from the Bible. London: Student Christian Movement, 1924. Pp. xvi & 397. 5*s*.

This is a volume of Bible readings for use in College clssses. The readings are arranged topically, dealing with God, Man, Brotherhood, The Kingdom of God, The Beatitudes, etc. The arrangement has been judiciously worked out, and texts are brought together in such a way as to make their meaning more illuminating. The volume is worthy of commendation.

The Chaitanya Movement—By Melville T. Kennedy, M.A. Calcutta: Association Press and Oxford University Press, 1925. Pp. xii and 270.

Mr. Kennedy has succeeded admirably in his description of the Chaitanya movement. There have already been a number of works on the subject which made his task in some respects more difficult and in some respects less so. We have notably the works of Prof. D. C. Sen, published by the Calcutta University,

such as the admirable book on *Chaitanya and His Age* which was reviewed in these columns two or three years ago. Then of course there is Sir R. G. Bhandarkar's well known work on *Vaisnavism, Saivism and Minor Religious Systems*. This gave our author some valuable material with which to begin his investigations. But he has succeeded in writing a book that is a fresh contribution to the subject in a style that is pleasing and forceful.

The story of the man himself and his religious experiences is more or less familiar to most people in this land. Chaitanya was a mystic of the ecstatic type, his ecstasy taking the form of frenzied dancing and singing. It was a form of *bhakti* worship, the object of devotion being Krishna. The very mention of the name of Krishna was sometimes sufficient to send Chaitanya into a frenzy that culminated in unconsciousness. The singing and shouting of the name of Krishna had all but a magical effect wherever he went. Men would come to scoff and to ridicule and would end by joining in the praise of the name beloved. The *sankirthan* became one of the characteristic features of the sect, and is yet of Vaisnava worship, a fact which it owes much to the influence of the Bengali saint.

The Chaitanya movement was larger than the influence of the individual himself. He attracted to his sect many individuals, some of whom became great powers in the land. And the movement itself had far-reaching effects on the moral and religious life of Bengal For one thing, Chaitanya taught that the worship of the Lord must not be confined in any manner to any caste. The outcaste who has caught the divine spirit can become a real bhakta just as truly as the Brahman. This was socially a revolutionary doctrine. Dr. D. C. Sen thinks that Chaitanya himself was the moving spirit in the social revolution. Here Mr. Kennedy differs with him. While acknowledging the influence of the leader, he believes that the guiding spirit of the social measures which were undertaken was Nityananda.

Whatever be the immediate source of this social upheaval, which came nearly being a revolution, there can be no doubt of its effects on the Bengal of the day. It created a new spirit in the rank and file of Hindus, Kennedy points out, which came to threaten the supremacy of the Brahman priesthood. It preached a doctrine of social equality in matters of worship. Here is a bond that transcends the power of family or caste. This is the spirit which underlies all democracy in religion, or out of it. It was the same doctrine that the man of Galilee had taught in the face of the Pharisees and Saducees. But the opposition which the Chaitanya movement had to face was terrific. All the more wonder, was it, that it met with such conspicuous success and was able to maintain spiritual leadership for such a long period. It was a great pity that in the end the movement with its great social heresy succumbed before orthodox Hinduism, though even to this day it is the refuge of the social outcaste.

A. S. W. in *The Madras Mail.*

College Notes

THE HON'BLE SIR A. P. PATRO, Minister for Education in the Madras Government whose photograph we reproduce elsewhere, requires no introduction to our readers. Born in 1876 he graduated from this College in 1898 and after taking the B. L. Degree in 1901 he set up practice at Berhampore. He very early took a deep interest in municipal problems and visited Europe in 1913 to make a special study of the working of English municipal institutions and their financial resources. A keen student of Indian rural economics, Sir Patro is the author of a volume on the subject. He was a prominent Congressman of the old school and for his great services to the local and municipal institutions he was made a Rao Bahadur in 1920. Sir Patro was returned to the Legislative Council by the Ganjam Non-Mahomedan rural constituency during the first election under the Reform Act and when the Hon'ble Mr. Subbaraya Mudaliar, Minister for Education, died in 1920 that portfolio was entrusted to his care. As Minister for Education Sir Patro has not only remodelled the University of Madras but has given great attention to the spread of elementary education making it compulsory in selected municipal areas. In appreciation of his services to the cause of education a knighthood was conferred on him in 1924. Sir Patro who is now busy bringing into existence a University for Andhradesa is still young and vigorous with many years of service before him in behalf of his motherland.

WE ARE PLEASED TO HEAR of the election of Mr. S. V. Ramaswamy Mudaliar as a director of the Madras Board of the Imperial Bank of India. Mr. Ramaswamy Mudaliar is the son of the late Rajah Sir S. Ramaswamy Mudaliar, who is well-known as a great businessman and as the founder of many charitable institutions throughout this Presidency. Mr. Ramaswamy Mudaliar was educated in this institution and was given very careful training by his father under the personal supervision of a member of our own staff. Soon after the death of his father, Mr. Ramaswamy Mudaliar took upon himself the management of his extensive estates and his large financial dealings and it is a matter of common knowledge how successfully he has been following in the footsteps of his father. Mr. Ramaswamy Mudaliar is a man of few words and impresses one as a strong, silent man. Various political groups in this Presidency have tried to enlist his sympathy and support for their programme but Mr. Ramaswamy Mudaliar has been too elusive for their grasp. It argues, however, considerable restraint and strength of character to be able to resist limelight at a time when publicity is becoming the very breath of the nostrils with some public men in this country. A keen student of India finance he has always pleaded for Anglo-Indian co-operation for the economic development of this country. A clear thinker and as patriotic as any living Indian Mr. Ramaswamy Mudaliar does not believe in short cuts for the political salvation of his country. A sound liberal in politics he is one of the few Indians who has not confounded democracy with mobocracy. He has no illusions about the making of his own-

nation and never misses an opportunity to emphasise that no nation can be trans ported to a democratic state with the twinkle of an eye by an Act of Parliament. While there is no warmer advocate of the indianisation of the Imperial Bank, Mr. Ramaswamy Mudaliar knows only too well the disastrous consequences of forcing the pace beyond certain limits. He is a great lover of art and his rich art collections are greatly in demand at the exhibitions in different cities of India. Born in 1881 he is still young and his presence in the directorate of the Imperial Bank of India will be reassuring to Indian businessmen who have been nursing grievances against it. Our congratulations to Mr. Ramaswamy Mudaliar.

We deeply regret to record the death of Mr. Mupil Nair of Kavalappara which took place at Shoranur on 19th July. Born in 1889 and educated at Newington and this College, Mr. Mupil Nair was a rich landholder of Malabar. Entering politics as a 'liberal', he later on joined the non-Brahmin Movement and visited England in its interests in 1918. He represented the Malabar landholders in the Madras Legislative Council of the pre-reform days and became a member of the first Legislative Assembly under the Reform Act. But failing health compelled him to retire from active participation in politics in 1923. During the great war Mr. Mupil Nair greatly helped recruiting in Malabar and in appreciation of his services the rank of honorary lieutenant was conferred upon him in 1919. His premature death is a great less to the *jenmi* interests of Malabar, especially so now when a tenancy bill is pending before the local legislature. He was greatly attached to this institution and presided over the College Day celebration of 1918. We wish to convey our condolences to the members of the bereaved family.

There have been a few changes in the staff since the College closed for Michaelmas. Mr. S. G. Manavalaramanujam, Lecturer in Zoology and Mr. A. V. Moses, Lecturer in Physics left for England in September on long leave for higher studies in their subjects. On the other hand Dr. Moffat returned from his short furlough and the staff has been strengthened by the arrival of two new professors in Mr. E. J. Bingle and Rev. A. J. Boyd. Mr. Bingle, who is a distinguished graduate of Oxford, becomes the third Professor of History and Mr. Boyd who has joined the English Department had a distinguished academic career at the University of Glasgow. The new Headmaster of the High School—Mr. G. D. Watkins—arrived at the end of September and took charge from Mr. Muliyil who is retiring from College service. Mr. Watkins is a Science (economics) graduate of the London University and has had several years of teaching experience as a lecturer in the Municipal Technical College at Hull.

During the first term the work of College societies was as good as could be expected. The Christian Union and the Brotherhood held their annual receptions to the new students and the Associations of the various Departments have been very active. But the Debating and the Literary Societies are still thinking out their programme of work and we are still waiting to listen to the inaugural address of the Associated Societies. Meanwhile we welcome new organization in the shape of Inter-hostel Society which is a kind of federation of hostel associations. While

the hostel associations maintain their individual existence, they meet for purposes of conference and debate in the Inter-hostel Society. The formation of this Society marks an advancement and will be another bond in the developing companionship of our hostel life. The hostel associations are not by any means idle and the First Students' Home presented the other day an animated scene when the members discussed whether non-co-operation was a piece of political folly or wise statesmanship. A high level of debate was maintained. The members of Caithness Hall had the privilege of listening to an address from Mr. T. V. Seshagiri Aiyer. The subject was 'the place of religion in public life' and Mr. T. V. Seshagiri Aiyar said that this topic had been suggested to him by an arresting remark he had come across, to the effect that no man can be a worthy citizen of an earthly state unless he be first a citizen of a heavenly state. However startling that assertion might seem, he considered it fundamentally true. Unless the young men before him learned to value aright the physical, intellectual and moral adjuncts of life, the future would have in store for them only disappointment. Without fidelity to the honourable and right, even the brilliant man would end in failure; with it even the mediocre would succeed. There have been very ordinary men who have reached the summit of the legal profession because they have understood the value of straight dealing. Crooked ways might attract clients for a time; but when a judge had once realised that a particular advocate was not of trustworthy character, he become a marked man and there was an end to his usefulness. In Medicine, Trade and Government Service experience and observation taught the same moral. Or if one turned from the conditions of individual success to those of public advantage, one found the same principle illustrated. What was the root of communal jealousy and strife? Was it not a failure of genuine religion? And on the still broader field of national and international affairs, was not the idea that politics ought to be divorced from religion precisely the opposite of the truth? If a Gandhi had an influence in India and beyond it far exceeding that of men who were his superior in mere intellect, it was because of his outstanding loyalty to truth and religious feeling. If a Woodrow Wilson had at one time shouldered the world like an Atlas, it was because men felt that he put morality in the forefront of international politics. Or take another statesman, intellectually far above either of these great men, W. E. Gladstone. The motto, 'Righteousness exalteth a nation' was ever on his lips, and if he was less successful than either Gandhi or Woodrow Wilson, it was because he was surrounded by men less single-minded. There was a warning, however, that needed to be uttered. The religion that was so vital in public and in private life must not be individualistic and must not be superstitious. In latter-day India religion had tended to be too otherworldly—too much a longing of the individual soul for its own release from the imperfections of this present life. It had not been sufficiently transfused with the social motive. But stories from India's past showed that this had not always been so—stories of 'tapas' practised to win blessings for others, or the great story of how Ramanajachari resolved to publish his 'upadesa' even if it meant the damnation of his own soul. The lecturer concluded an impressive address by urging his hearers to cultivate wide sympathies and stand out bravely for the fundamental verities of life.

Prize Distribution.

THE CONVOCATION OF THE UNIVERSITY OF MADRAS was held on the 20th August and on the following day the College prize distribution came off in the Anderson Hall under the presidency of His Excellency the Right Hon'ble the Viscount Goschen, Governor of Madras. The function was largely attended and besides the members of the staff and members of the College Council there was a large gathering of friends who take a keen and abiding interest in the work of the College. His Excellency was received by Dr. Meston and took his seat amidst cheers. After prayer by Dr. A. G. Hogg, the Principal presented the following report:—

The twelve months which have elapsed since as a College we last gathered for our prize-giving afford no ground for a discourse on the mutability of human affairs. Changes have been few where least desirable, and more frequent where they were to be welcomed. This will be evident if in this short and informal review of a year's work I answer a few questions which you might naturally ask me.

I. 'Has there been much change in the staff?', you say. 'Very little' I am happy to reply. Some of the professors proceeded on furlough, while others returned from it, in natural course. Two of our lecturers Mr. Jacob and Mr. Srimanbadar have severed their connection with the College and we regret their loss. Mr. Jacob has gone to join the sister college in Alwaye, and deprived us of his eager labours on behalf of the students of philosophy, and Mr. Srimanbader has completed his term of service in the College where he has given of his ability and unceasing effort in the honours English courses. Mr. Venkatachari, Mr. Zacharias, and Mr. Ninan returned to their old College to take their place on the lecturing staff, and we are happy to have them; while the place of Mr. Mahadeva Mudaliar whose death was a great loss to the teaching of Tamil was taken by Mr. T. C. Parthasarathi Iyengar. Three most welcome changes remain to be chronicled. In September the Mathematics department was strengthened by the arrival of Mr. Kibble who by his distinguished career at Cambridge, his intimate knowledge of his subject, and his power of friendship has already made a very definite place for himself in the College. At the beginning of this academic year Mr. Manikkam exchanged the status of lecturer, for that of professor, of physics, and in this well-earned recognition of his personal influence, abounding energy, and professional standing we greatly rejoice. At the same time there joined the staff as a recruit to the philosophy department Mr. Theodore who belonging to the continent of Asia, continued his studies in that of America, and came to us with Oxford laurels straight from the continent of Europe. We are glad to have him with the erudition gained in three continents before he is seized with a desire to lay under contribution the only two continents that remain. There is one change in personnel to which every student here would wish me to refer although the change does not concern the teaching staff. Mr. Rajendram our Head Clerk and Accountant after 19 years invaluable service to the College passed away in harness in the month of May. Of what the College owes to his clear financial head and what students owe to his kindness of heart and worthy counsel we are deeply sensible. We lay upon his grave the tribute of our gratitude, while to his family we extend our heart-felt sympathy. When death suddenly overtook him it found his office affairs in perfect order and the return for April in

his beautiful bold hand was lying on his table ready for submission to the Bursar. In his place we welcome a former student of our own, Mr. Daniel, whose experience and technical qualifications augur well for the days that are to come. The duties fo Bursar fell on the shoulders of Mr. Matthews, when Mr. Mackenzie left on furlough, and hardly on any one could have fallen, a harder task than that which came to him through Mr. Rajendram's death. But Mr. Matthews in addition to his other qualifications has the resource of a good foot-ball player, and his resolute but quiet tackling of the office at a time of great difficulty brought it swiftly to the goal of settlement and effectiveness.

II. 'What about change in students?' If you mean numbers I reply "Not much." The desire for admissions was very great and exercised most careful and constant thought through the two months of May and June. The result of all this attention is that there are now 694 students reading in the pass courses, and 117 in the honours and post-graduate courses, together with 51 who have come back to be coached up separately for the Intermediate Examination and will leave in September. This large total is drawn from practically every district in the Presidency. The position of the Senatus is that if the staff is to give to the students the attention which is right the number of regular students should not exceed 300, a position by no means easy to maintain, especially in view of the continuance of the very pressing desire on the part of students to take up the science courses. This demand has attained dimensions which have gone beyond the powers of the constituent and affiliated colleges of the University to supply. Provision for the science side of education on the scale which the University courses require means a large expenditure, and comparatively few colleges are able to face it, and these few find themselves besieged by members far in excess of the equipment, accommodation and staff which they can provide. To meet this the science department of this College has readily agreed to the holding of practical classes in the morning, before regular College hours, and this has proved a great relief, for which our thanks are due to the professor and lecturers concerned. But the number whom I have had to refuse for admission to the science groups in May and June last came to over 200. Some of these were unfitted to take such a course, but the great majority were as qualified as school and college records could indicate. I was constantly asked by fathers and sons whose admission I was refusing whether there was no hope of their being admitted, and the only answer I could give was—"The one hope of your being admitted is if the old boys of the College will make a present to the College of a new laboratory." But our experience, which is not confined to ourselves, raises a question which has a wide bearing, as will be seen from the following facts. In June 1923 these were admitted to the Junior Intermediate class, on the basis of what I judged to be a satisfactory S.S.L.C. in each case, 54 students to the group which takes up Mathematics, Physics and Chemistry, and 47 to the group which takes up Physics, Chemistry and Natural Science — 101 in all to the science groups of the Intermediate course. Of these in June 1924 (a year later) I was able to promote to the Senior class 47 of group 1, 33 of group 2 — 78 out of the 101. And when the University results came out

in 1925 (again a year later) 23 of Gr. 1 and 12 of Gr. 2 — or 35 out of the 101 — had passed the Intermediate Examination in its entirety. This gives ground for pause in a College which seeks to deal fairly with admissions and promotions. And it is to be remembered that the pressure is greatest in group 2, the group which calls for the greater expenditure. Now in this group only 25 per cent. of those who entered in 1923 passed the Intermediate in 1925. It is evident that a large number of those who clamour anxiously for admission to the science groups, backed so energetically by their parents, are not in a position to take full advantage of the first two years of a University course as at present arranged. Further, it has to be borne in mind that in this Presidency there are no outlets such as exist in the great industrial centres of our neighbouring provinces. The rush for admission to science groups, it will be seen, is not wholly to the advantage of scores of students or their education. Facilities for the education of those who find a real interest in science and who will benefit by it, even though they may not pass University tests, ought to be, and ever will be, afforded in this, as in other, colleges. But it is clear that desire to study science is not necessarily identical with aptitude for that study, and that many of those who now cherish that desire would be doing a greater service to themselves and their country by pursuing courses which while not concerned with physics, and natural science are in their method equally scientific.

III. " What as to finances ? ". ' More and more the expenses of such an institution run into figures which a few years ago would have been thought incredible '. With the practice of most rigid economy and with scales of salaries which only the whole hearted loyalty of the staff could accept with such cheerfulness, the expenditure is still such that to maintain the activities of the College unimpaired is a source of constant anxiety. The ordinary running of School and College combined amounts to over 2,60,000, and this takes no account of the provision of scholarships for which funds are provided, or the maintenance of the former Basel Mission College at Malabar, or the outstanding debt on our most recently erected hostel. Of this Rs. 2,60,000 over Rs. 60,000 came from the churches and missionary societies which are responsible for the College, practically 1½ lakhs came from fees, while the teaching grant received from government came to 41,000. To put it briefly, compared with the previous year the management has increased its contribution, the students have increased their contribution, the government have diminished theirs. This latter fact is unfortunate as regards this particular College, for the amount of the grant can hardly be regarded as an adequate recognition by the State of the contribution which the Colloge is making towards the development of the most valuable resources of the Presidency. But it has an aspect that stretches into the larger region of General educational policy. Convinced as I am, through long-continued study of official documents and the careful observation of conditions actually prevailing, that the great hope for the speedy, economical, and acceptable spread of education in this land lies in the fullest acceptance of the grant-in-aid system, I welcome every endeavour to give practical effect to the essential feature of that system — the steady and generous co-operation of the State with private managements in the diffusion of knowledge. But where this co-operation fails of

its true exercise, then in common with all who have the best education of this country at heart, I cannot but deplore it ; for on the one hand such action fails to take advantage of one of the greatest supports of settled government the partnership of those who care for education so much that they give voluntarily of their own resources for its advance, and on the other hand, at a time when every effort to spread education on a sound basis is recognised as deserving encouragement, the failure to give that encouragement is nothing less than a national deprivation

IV. " What as to the corporate life of this College ? " The answer is : ' The life is healthy, the spirit excellent '. How true the answer is a few facts will corroborate.

(*a*) The spirit is that of a family, those of us who teach being simply the older members of it. The family, as it is composed, is but a mirror of the larger world. The communities which, in other regions have a story behind them of variance and distrust, here meet on the same benches, on the same playing field, in the same corps, in happy fellowship, combined activity, and friendly rivalry. The story of the College in its early days has much to tell of classrooms emptied because of converts to Christianity and the admission of those of depressed classes : it stood as it still stands the champion of these, and with the happiest results. Through its school for many important years the College was opening the way for the non-Brahman community to take their place in the body politic. When circumstances changed a year or two the Brahmans appealed to us as their supporters. When I was making the admissions in June, one applicant besought me to take him in because, as he said, " While I am a Brahman, I am a keen supporter of the Justice party." I think we may claim to have boxed the compass. Though large in numbers, and diverse in origin, we are glad that we are really a family, and a happy family at that.

(*b*) But in a family there is give and take, a quiet self-discipline which give the right tone. And here many influences combine to impart that tone. The *hostels* are in their mode of management concrete examples of local self-government. They each accommodate roughly about 50 members and those who are ultimately responsible for their management live either in the hostels or in close proximity : but the internal direction of the homes is in the hands of the residents and the trust is not misplaced. At the time when they were founded the older hostels were intended to serve only definite communities, but is is remarkable how opinion is changing on that point. There is a growing feeling among the members that such restrictions should be laid aside with all suitable speed, and already in some of these hostels communal representation on managing committees has been voluntarily abandoned. The more lately established hostels are open to members of all communities. Over a quarter of our students live in College hostels : we wish that it were possible to provide for another quarter.

Then a really good sporting spirit is at work among our students. It is not merely that our annual college sports were again a great success, that football matches were won, that tennis and hockey had their enthusiastic devotees, that some of those whose record in class is excellent have a no less excellent

record on the playing field, or that athletics is appealing to, and actively engaging, a larger number of students than has been the case in past years. What is best of all is that it has been possible to say in the review of the Athletic Associations work, "Classes have not jockyed for a favourable day when all their strongest players were available, but have put the best team they could muster into the field : and the teams have played the game for the sake of the game, and whether treated well or ill by fortune, have gone home weary but in good spirits without conceit and without bitterness."

Then the U.T.C. supplies a very valuable element of self-discipline and self-accommodation. Although this is now its third year and the attractions of uniform and photographs in uniform have faded, the number desirous of gaining admission to the corps shows a very healthy state of affairs. There were 75 applications for 40 vacancies at the beginning of this year. In camp and on parade they form a happy, hard working and co-operating body. The full strength is 76 and we should be glad if the complement could be increased to 100. Bnt we have no desire to see it increased beyond that number. For we are not of the number who think of such training as being a matter of routine, still less do we consider that such training should be obligatory on the students of the universities. We are of opinion that admission to such a corps should be regarded as an honour and that those who have been enrolled in it should ever cherish the memory of their membership with pride. In this way while militarism will be discouraged the finest benefits of self-discipline will be conserved. I should fail in my duty if I did not emphasise the debt which this College and indeed the Uuiversity as a whole owes to Captain Maxwell-Lawford whose enthusiam and sympathy and ability have been beyond words.

Then the College Societies have supplied their contribution towards the strengthening of family ties by argument and discussion, although in a less degree than is desirable. Yet while the efforts of the societies have not attained the continuity which we should have liked, there is this to be said. Almost everything connected with the Societies has been done by the students themselves. The meetings of the societies have not been simply gathering of students to listen to some one who is not a student addressing them. They have been meetings where the students of the College have read addresses and following these with their own comments and where also they have led debates and carried on more or less vigorous discussions. I consider that one such meeting under these conditions is worth a good many meetings under the other conditions. The George town hostels have formed an Inter-Hostel Society and the good results of that have been at once apparent.

(c) A third most valable feature of corporate life is the loyalty of the students to their *alma mater*. In a score of ways this has been impressed upon us. I shall mention only one. Years ago there was a readiness on the part of undergraduates to move from one college to another. That nomadic spirit ceased to make itself prominent some eight or ten years ago. But it has once more, I am sorry to say, made

itself felt. I think the operation of selection committees in government colleges, the considerable additions to the number of affiliated institutions, the opening of new groups in various colleges, the growingly strict promotions, and the sense that under the new University Act matters education are in a state of flux, have all contributed to this result. I am happy to say that the spirit has found the atmosphere of this College uncongenial. This fact was pressed upon me as I was engaged in writing out conduct certificates for students who had finished their studies and were now embarking on their life's career. Out of 130 conduct certificates which I issued in the three months between the 1st of May and 1st August, thirteen were given to those who, having passed the Intermediate, were entering the Medical and Engineering Colleges, and fifteen were given to students who, in attendances on the honours courses, had spent at least 3 years with us. This left a remainder of 103, and I found that out of it 32 were given to students who had been four consecutive years at College. And in the case of these not a few had come on from the High School attached to the College. This loyalty in spite of the disturbing factor of the Intermediate Examination leaves its beneficent stamp on the character of the students and the life of the College. Surely it is time that, within the 10 miles radius of the University Act, Colleges were given a 3 years uninterrupted arts course.

I have answered most of your questions as to the condition of the College for the past year. It is one in which staff has combined with fullest loyalty, and obstacles have been overcome by a pleasant spirit of mutual help, and our students have been our stimulus and encouragement. What old boys have done has also come in to strengthen our hands. Within the last 3 or 4 months to go no further back we have been reminded of our far spread net by the appointment of Dr. John Matthai to the Tariff Board, of Mr. Ramasubban to a full agency of the Imperial Bank, of Mr. Bower to be Inspector-General of Registration, of Sir Venkataratnam as Vice-Chancellor of the University, and Mr. Muhammad Usman as a member of Your Excellency's Executive Council—all old boys, each representing a different community, and each by us highly esteemed. We are glad that our education tells. By this is not meant that it succeeds only in the many public tests to which students have to submit, though even here we have every reason to be satisfied. For our last University results were exceedingly good both in the Intermediate and B.A. Examinations, and of the 877 arts graduates proceeding from Colleges who passed before your Excellency at yesterday's Convocation, 135 belonged to this college, and 4 University distinctions fell to our lot. But our system of education has its effect beyond the day of graduation and on the life's conflict through the exercise of thought which it encourages, the sense of responsibility is fosters, the formation of ideals which it promotes, the corporate activity which it emphasises, and in the acknowledgement of life as a divine trust which it seeks to advance.

And with the consciousness of having done something, however imperfectly, to build up and diffuse this form of education during the past year, and with the satisfaction which our family life within this College has brought us, we have good reason to thank God, to take courage, and to go forward.

His Excellency in distributing the prizes spoke as follows :—

Mr. Principal, Ladies and Gentlemen, and Students of the Christian College, This is the first time I have been privileged to preside at the prize-giving of this College and I can assure you that I welcome this opportunity as giving me a chance of meeting the staff and students of the College which has done such splendid work for the promotion of education in this Presidency. (Applause.) May I also add a personal note that as a College man myself it is always a pleasure and relaxation for me to meet the members of other Colleges because I think you will agree with me that to whatever College we may have spent a part of our life there is always between all College men a bond of friendship and sympathy. (Applause.) I have taken the opportunity to read your College Calendar for 1924 and have thereby learned a great deal about the College and school which I did not know before I have studied with great interest its long and honourable history. Much of that history is bound up with the life and work of your benefactor, the late Dr. Miller (applause), whose portrait hangs on the College walls and whose memory still lives to inspire and guide you on the path to higher things. The example which he set by his devotion, his large-hearted charity and his indomitable spirit should for ever be, if I may venture to say so, worthy of emulation by all particularly young men, and if you set yourselves steadfastly to follow his teachings both in your present life and in your life after you leave the College then I have no fear for your future, for you will grow up to be good citizens in the fullest sense of the word.

I may assure you that I do not want to preach to you this afternoon but I think I can to-night take no better theme than the life of the late Dr. Miller and, if I may, I do want to give you this afternoon one important lesson which proceeds from the reference I have made to Dr. Miller's life and that is this: that while you are still young you must try to cultivate the spirit of sympathy with all men of whatever race of whatever colour and of whatever creed for without sympathy in life there can be no co-operation and no progress. Some of you perhaps will remember the famous words of Abraham Lincoln, "With malice towards none and with charity towards all." I can give you no better definition of sympathy than those words; sympathy is a wide term; its opposites are hard-heartedness, bigotry and hatred, which are also only too common in this world, ready to sow disunion among men with all their attendant evils. Learn, if I may venture to say, to cultivate sympathy and charity towards your fellowmen as much as possible while you are still young and as you young men of to-day learn that lesson, so in proportion will the evils born of malice grow less and less in the world of to-morrow.

Gentlemen, I have listened this afternoon with great interest to the report which your Principal has given us. The report records no mean achievements in the fields both of work and of play and must, I am sure, be a source of great satisfaction to those who are concerned in the running of this College and school. I have to congratulate the College Council on the success achieved by its students in the University Training Corps and trust the students will maintain the high record of keenness and efficiency of which I believe there is every promise. Perhaps as one who himself belonged to a University Training Corps, I must strongly emphasise the value of the discipline to be obtained in such a Corps which brings out all that is best and unselfish in the young men and makes them fit for manhood and citizenship.

Now, gentlemen, there was one portion in the report which your principal delivered to us this afternoon to which I listened with some regret. I regret to learn that the financial position of the College is such as to cause some anxiety to the Council. But I do most sincerely hope that their apprehensions will be modified as time goes on. I am sure of this that the Government will not allow the life of the College which has rendered such excellent work to the cause of education, to be imperilled for financial consideration. (Loud applause).

May I in conclusion, on behalf of those who are present this afternoon, offer my sincere congratulations to those who have been successful in the examinations and have won prizes

here this afternoon. It has been a great pleasure to me to distribute the prizes. I had a very short and cursory opportunity of looking at the names of the books presented and I am sure that if those who received the books will devote a careful study to them they will indeed in a short time become learned men. (Laughter). We offer our congratulations to those who have won prizes and trust that their success to-day will inspire them to greater achievements in the future both here at College and in life afterwards.

To those who had not the good fortune to win prizes may I venture to say "better luck next time." (Laughter and applause). I should like to thank the staff and students of the College for the exceedingly warm welcome which they have been good enough to extend to me this afternoon and to express the hope that my visit here to-day will not be the last. (Prolonged Applause).

Mr. Paul Appaswamy then thanked His Excellency for presiding over the function, thus showing his interest and sympathy for the College and his abiding faith in its future. The Madras Christian College was not only the oldest of the educational institutions in South India but was also easily the first of them all. It was in itself a University and the influence of the College on South Indian life was certainly larger and more potent than that of the University itself.

After the Lord Bishop of Madras had pronounced the benediction, His Excellency and party adjourned to the College hall where a reception was held in honour of the new graduates. After tea His Excellency left and Mr. J. P. Cotelingam presided over the meeting which was attended by a large number of graduates of the College and old boys. Mr. Henderson then addressed the graduates as follows :—Mr. Chairman, Ladies and Gentlemen, College Graduates of the Year, I have in the first place to express my regret and yours that Mr. Norrie Anderson who was to have been in charge of the Guard of Honour and to have given to you from this platform the message from the College is prevented by ill-health from doing so.

You have had already a good deal of advice from the Chief Justice and others and no doubt in hostel gatherings and other such associations there is more awaiting you. Have you grown cynical in the matter of advice and learnt to endure it with the feeling "O, advice that is cheap enough ; and merely a form?" Perhaps that represents the attitude of some who were at convocation yesterday. I do not know : but I do not think it is characteristic of the students of the university still less of this college. If we turn out cynics then the sooner we cease to exist the better for the world.

There is something natural and right about the tendency to given advice at such a time as this. For graduation marks the passing from one stage to another, the mounting of an elevation ; and from these elevations in life we have a chance to look back, to look around, and to look forward and see from the elevation the general features, the more outstanding facts, the deeper meaning of life. From these elevations the smaller details are not visible, some of the pleasant and more troublesome facts are concealed, but we have all enough experience to knew that they exist. Now the point I want to make is this that these views that we get from elevations are true and real though the smaller features are concealed. The cynic with his eyes fixed on the sordid details denies the reality of these birdseye views but he

has no right to do so, nor to insist that only the details of day to-day experience are to be taken into account. The general outlines, the clearer features the deeper insight that can be got from these viewpoints are true and valuable. On the other hand there are those who become excited as they look around from the higher levels, who see the past through a rosy haze of sentiment who forget the sternness of reality with its irksome details and who see the future a-blaze with opportunity. These extravagant people who forget about experience with its daily frets and jars are the result of the cynics, Extremes provoke each other and drive each other from the narrow middle way which is called the 'golden mean.'

From this elevation, the stand point of graduation, then we may look back and forward and be the better for it if we can keep heads. You look back at your years of College life and do not see only the sequence of daily routine, the occasional shocks, and jars, the ups and downs. Some, perhaps all of you, see deeper and more clearly than that, see below the details of the daily round and the crudeness of reality into the meaning, the character, the spirit, the ideal of Our College and you feel your affection going out to her. To these who so feel towards the College I can only say you have given the most precious thing you possess, your good will, and the College values that highly and would accept it reverently and ask with some wistfulness that you do not let that good will fade. There is the College Day Association : will you join that ? But whether you do or no will you cherish that kindly feeling even after you have long left its walls and become engrossed in new activities. And that she says not only to those who are ambitious and those who are to take the more prominent places but especially to those who are to have a more obscure but not less honourable position. With the ideal of our College such snobbishness as has eyes only for the conspicuous has little in common.

With those who feel that good will towards her, the College has much in common and with them she hopes she has shared her inspiration. If so the benefit that has came to you as the result of your attendance and membership is not simply the degree with its material value as a means of admission to one opportunity or another, but the deeper and more real benefit of a trained judgment, a finer taste a truer sense of values. These are the important things. These are the standards by which an educational institution of this kind is to be tested and not by examination results. Are you who have passed through our college men of sounder judgment, deeper penetration and firmer grasp, men who are not to be betrayed by prejudice or popularity or any of these strong impulses with which we have all to contend ? And in the next place are you men who have a keener perception, a finer taste an increased power to appreciate the wealth and splendour that abounds in the world of nature, of human society and of literature ? And finally in this matter of spiritual values : do you think that the reference to that is a mere form ? If it seem so then it is a serious matter. I know and you know that for a great many people spiritual concerns are not considered to be practical and idealism is an emotion that wears off, but I know and you that among those whom we most respect even among those who occupy positions of importance there are those for whom spiritual matters are supreme and not 'just forms.' I have known one old student of the college who as a magistrate before he entered upon his duties for the day

and when he resumed his duties during the say, spent some time in prayer; staying himself upon the great spiritual reality.

That is what I have to say to you this evening in bidding you go on and prosper, prosper not in the superficial meaning of worldly success but in the deeper sense. In the experiences that await you it is possible that you will grew successful but hard and cynical. I wish you no such future as that, but whether you take the world's prizes or not, that you grow more patient more generous: bigger hearted men. India and the world has need of such.

THE FOLLOWING EXTRACTS FROM THE SPEECH of His Excellency the Viceroy at the prize distribution of Bishop Cotton School, Simla, will be read with interest and profit :—

"I agree with the headmaster," observed His Excellency, "that Indian, European and Anglo-Indian boys should grow up together. Thereby they learn to appreciate each other's qualities. The question of racial distinction and communal feelings quickly disappear in boys. The object of school life is not to pass examinations but to develop character. Character is higher than intellect, and in the great battle of life, character will win. A boy with second place in learning but first place in character is sure to achieve something in the world. Honour, fearlessness and calm judgment are attainments boys should hope to achieve as a result of their studies at school."

FOOTBALL.—The season opened, as usual, with the J. R. Henderson Inter-class Tournament. For a variety of reasons, it did not begin till several weeks of the session had passed; but once it did begin, it proceeded with great vigour. Three games were played regularly every week, and the tournament was finished before the examinations started, which is probably a record. This efficient organization was the work of the Captain, Mr. S. J. Rajamani, and was therefore, we suppose, the effect of the U.T.C. training.

But though the progress made is so satisfactory, there is still much room for improvement. Teams which were not prospering very well lost much of their interest in the tournament; and when it became fairly certain that the Senior B. A. Class was to win, it also became extremely difficult to get the other teams to play on. Many games had to be carried on with one or both sides short of two or three men; two games had to be scratched altogether. This is not sportsmanship. If we cannot play simply for the pleasure of the game and of the sense of fellowship that it brings, we had better not play at all. We must try to learn

"To set the cause above renown,
To count the game beyond the prize."

As last year, six teams entered, severally representing the four pass classes, the Honours classes, and the High School. The senior B. A. class had a clear victory, playing 5 games and winning 5.

CRICKET.—The College Cricket Club has been very active, though the Senatus has not so far found itself able to give much practical help. The Captain and Secretary, Srinivasan and Virasinghe, have both shown fine initiative. Practices began on July 7th., with about twenty-five members; many of them beginners, which is an encouraging thing. The practices continued regularly through the

term, and were well-attended, though the players were not always as punctual as they might have been.

Four matches were played. The match with the Egmore Young Men's United Club had to be abandoned, owing to rain ; the Madras Eastern Club beat us by 123 runs to 56 ; the Doveton College was beaten by 142 to 63 (Chandrasekaran scoring 60) ; and the Excelsior Club beat us by 136 to 122.

Judging by these matches, Chandrasekaran is our best batsman, and F. Martinus our best bowler.

It was unfortunate that a serious accident at hockey deprived us of the services of Mahalingam.

The following is the list of preachers at the College Church service during the second term :—

Oct.	11.	Rev. A. S. Woodburne.
	18.	Rev. A. Moffat.
	25.	S. J. Theodore, Esq.
Nov.	1.	Rev. J. N. Anderson.
	8.	F. W. Henderson, Esq.
	15.	Rev. L. P. Larsen.
	22.	Rev. W. Meston.
	29.	Rev. G. Matthews.
Dec.	6.	Rev. J. E. Neill.
	13.	Rev. A. G. Hogg.